Vol. 1043 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

June 12, 1984

U.S.
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Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

June 12, 1984 Volume 1043 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,865,635, Re. S.N. 592,511, Filed Mar. 22, 1984, Cl. 148/11.5F, METHOD OF MAKING TUBES AND SIMILAR PRODUCTS OF A ZIRCONIUM ALLOY, Ake Sixten Boris Hofvenstam, et al., Owner of Record: *Santrade, Ltd., Lucerne, Switzerland,* Attorney or Agent: Ronald L. Grudziecki, Ex. Gp.: 111

4,056,465, Re. S.N. 593,531, Filed Mar. 26, 1984, Cl. 210/605, PRODUCTION OF NON-BULKING ACTIVATED SLUDGE, Marshall L. Spector, Owner of Record: *Air Products and Chemicals, Inc., Allentown, Pa.,* Attorney or Agent: Caspar C. Schneider, et al., Ex. Gp.: 176

4,323,130, Re. S.N. 595,269, Filed Mar. 30, 1984, Cl. 175/329, DRILL BIT, Mahlon Dennis, Owner of Record: *Strata Bit Corp., Houston, Tex.,* Attorney or Agent: William L. Mathis, et al., Ex. Gp.: 356

4,358,904, Re. S.N. 591,866, Filed Mar. 21, 1984, Cl. 36/117, APPARATUS FOR SELECTIVELY VARYING THE LONGITUDINAL POSITION OF A SKIER ON A PAIR OF SKIS, William H. Guild, Owner of Record: *Inventor,* Attorney or Agent: John A. Haug, Ex. Gp.: 353

4,402,038, Re. S.N. 594,886, Filed Mar. 22, 1984, Cl. 362/020, AUTOMATIC LAMP BULB CHANGER FOR SIGNAL LAMPS, Russell M. Hartung, et al., Owner of Record: *General Signal Corp., Rochester, N.Y.,* Attorney or Agent: Martin Lukacher, et al., Ex. Gp.: 223

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

COMMISSIONER ORDERED REEXAMINATIONS

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

Erratum

The following included incorrect information when originally published Apr. 3, 1984:

4,088,624, Reexam. No. 90/000,514, Ordered: Mar. 5, 1984, Cl. 524/425, SELF-HARDENING MOLDING COMPOSITIONS, Asita Bhattacharyya, et al, Owner of Record: *Societe D'Applications de Procedes Industriels et Chimiques S.A.P.I.C., Asnieres, France,* Attorney or Agent: Richard Leiter Johnston, Ex. Gp.: 142, Requester: Commissioner

Erratum

The renewal applicant in the following registration, listed in the "Index of Registrants" section of the Trademark Official Gazette of Apr. 3, 1984, for Registration No. 769,381 was incorrectly identified as Bradley Washfountain Co.

The renewal applicant's name as corrected is Bradley Corp.

MARK M. NEWMAN,
May 11, 1984. *Director, Trademark Examining Operation.*

Errata

"All reference to Patent No. 4,447,864 to Donald C. Smith et al of N.Y. for 'POST TOP LUMINAIRE' appearing in the Official Gazette of May 8, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,448,317 to Mortimer S. Thompson of Mass. for 'TAMPER EVIDENT CLO-

SURE AND PACKAGES' appearing in the Official Gazette of May 15, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,448,596 to Willem L. N. Van Der Sluys et al of the Netherlands for 'METHOD OF OPERATING A BIMODAL HEAT PUMP, AS WELL AS BIMODAL HEAT PUMP FOR USING SAID METHOD' appearing in the Official Gazette of May 15, 1984 should be deleted since no patent was granted."

Service by Publication

A petition to cancel the registration listed below having been filed, and the notice of such proceeding sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

World Soccer News, Inc., d/b/a World of Sports, Los Angeles, Calif., Reg. No. 1,118,195, for the mark "WORLD OF SPORTS", Canc. No. 14,064.

Kamp Togs, Inc., St. Louis, Mo., Reg. No. 794,839, for the mark "BECKY THATCHER", Canc. No. 14,170.

Cosmetically Yours, Inc., Yonkers N.Y., Reg. No. 870,578, for the mark COLOR YOUR LIPS "KISSABLE", Canc. No. 14,083.

B.K.S. Enterprises, Inc., Passiac, N.J., Reg. No. 1,210,651, for the mark "UP FRONT", Canc. No. 14,088.

Stanley Laboratories, Inc., assignee of John T. Stanley Co., Inc., Englewood, N.Y., Reg. No. 195,251, for the mark "PARADOX", Canc. No. 14,066.

Kores Manufacturing Corp., assignee of A-1-A Corp., New York, N.Y., Reg. No. 1,126,535, for the mark "MULTISTRIKE", Canc. No. 14,128.

Michel Cosmetics, Inc., assignee by mesne assignment and change of name of Michel Cosmetics, Inc., Long Island City, N.Y., Reg. No. 262,073, for the mark "MICHEL", Canc. No. 13,770.

Meister Brau, Inc., assignee by mesne assignment of James S. Kirk & Co., Chicago, Ill., Reg. No. 209,158, for the mark "LITE", Canc. No. 14,115.

Humphrey Yogart, Inc., Santa Monica, Calif., Reg. No. 1,131,508, for the mark "HUMPHREY YOGART" and design, Canc. No. 14,132.

Vista Communications, Inc., Manhattan Beach, Calif., Reg. No. 1,116,519, for the mark "PARTY", Canc. No. 14,181.

ERMA S. BROWN,
Deputy Clerk,
Trademark Trial and
Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on Tuesday, Oct. 9, 1984.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States who is not disqualified for registration under 37 C.F.R. 1.341(f) when you apply to take the examination, your application for registration *must* be accompanied by your supervisor's *verified statement* that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent. After passing the examination, you will be considered eligible for registration. If you are disqualified for registration under 37 C.F.R. 1.341(f) when you apply, approval of your application to take the examination will be subject to the following conditions.

1. If you pass the examination, you will not be registered so long as you remain disqualified for registration under 37 C.F.R. 1.341(f). However, if within one (1) year from the date notification of passing is mailed, your status changes and you are no longer disqualified under 37 C.F.R. 1.341(f), you will be considered eligible for registration upon satisfactory proof of your change in status.
2. If you have not become registered within one (1) year from the date notification of passing is mailed, you may not become registered thereafter except upon taking and passing another regularly scheduled examination.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $75 fee not later than July 31, 1984.

Application blanks may be obtained from the Clerk, Office of Enrollment and Discipline, Bldg. 3, 10th Floor, Room D27, Crystal Plz., Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk, Office of Enrollment and Discipline.

WILLIAM FELDMAN,
Director, Office of
Enrollment and Discipline.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Patent Licensing,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-441,198 (4,440,305). CARRIAGE FOR CABLE LOGGING SYSTEM.

SN 6-586,618. PROCESS TO PRODUCE DURABLE PRESS LOW FORMALDEHYDE RELEASE CELLULOSIC TEXTILES.

DEPARTMENT OF HEALTH & HUMAN SERVICES

SN 6-350,223 (4,440,747). MONOCLONAL ANTIBODY-RICIN HYBRIDS AS A TREATMENT OF MURINE GRAFT-VERSUS-HOST DISEASE.

DEPARTMENT OF THE AIR FORCE

SN 6-237,357 (4,439,767). LIGHTWEIGHT OPTICAL JAMMER SYSTEM.

SN 6-264,930 (4,437,710). INFLATABLE, INERT GAS-PURGED, WELDING CHAMBER.

SN 6-265,865 (4,438,395). CURRENT TRANSFORMER HIGH VOLTAGE PROBE UTILIZING COPPER SULFATE WATER RESISTOR.

SN 6-286,818 (4,436,437). HIGH ENERGY SINGLE PULSE LASER CALORIMETER.

SN 6-300,763 (4,435,810). SELF-SUPPORTING LASER DIFFUSER FLOW ENERGIZER.

SN 6-332,785 (4,436,260). OPTICAL SCANNER FOR USE IN CONFINED AREAS.

SN 6-332,894 (4,437,113). ANTI-FLUTTER APPARATUS FOR HEAD MOUNTED VISUAL DISPLAY.

SN 6-333,217 (4,437,748). HIGH ILLUMINATION FLASHBULB ARRAY WITH FIRING SEQUENCE CONTROL MEANS.

SN 6-347,384 (4,437,073). EQUALIZER CAVITY WITH INDEPENDENT AMPLITUDE CONTROL.

SN 6-370,693 (4,436,262). WINDBLAST HEAD PROTECTOR FOR USE DURING PILOT EJECTION FROM AN AIRCRAFT.

SN 6-375,642 (4,439,399). QUATERNARY ALLOY.

SN 6-393,266 (4,436,220). HERMETIC PACKAGE USING MEMBRANE SEAL.

SN 6-418,116 (4,438,007). PERFLUORINATED ALIPHATIC POLYALKYLETHER LUBRICANT WITH AN ADDITIVE COMPOSED OF AN AROMATIC PHOSPHINE SUBSTITUTED WITH PERFLUOROALKYLETHER GROUPS.

SN 6-431,496 (4,438,182). METHOD OF DETERMINING BATTERY LIFE.

SN 6-463,192 (4,436,886). 2-PHENYLBANZOTHIAZOLE POLYMERS.

SN 6-465,942 (4,437,080). METHOD AND APPARATUS UTILIZING CRYSTALLINE COMPOUND SUPERCONDUCTING ELEMENTS HAVING EXTENDED STRAIN OPERATING RANGE CAPABILITIES WITHOUT CRITICAL CURRENT DEGRADATION.

SN 6-468,628 (4,437,544). SERVICE PLATFORM FOR A LADDER.

SN 6-618,291 (4,439,769). COMBINED ADAPTIVE SIDELOBE CANCELLER AND FREQUENCY FILTER SYSTEM.

DEPARTMENT OF THE ARMY

SN 6-575,613. FURNACE FOR VERTICAL SOLIDIFICATION OF MELT.

SN 6-588,612. MONOLITHIC PLANAR DOPED BARRIER SUBHARMONIC MIXER.

SN 6-596,966. MULTIPLE GAP OPTICALLY ACTIVATED SWITCH.

SN 6-597,305. SAMPLING AND RECORDING DOSE RATE METER.

PATENT NOTICES

Certificates of Correction for the Week of June 12, 1984

Re. 31,406	4,385,794	4,412,437	4,430,411
D. 267,929	4,386,237	4,413,498	4,430,555
D. 272,777	4,387,898	4,413,673	4,430,581
3,674,144	4,389,486	4,414,003	4,431,570
3,927,925	4,390,502	4,414,145	4,432,072
3,931,246	4,390,615	4,414,814	4,432,304
3,952,024	4,391,833	4,417,123	4,432,768
4,089,059	4,394,448	4,417,467	4,432,827
4,120,570	4,395,273	4,417,829	4,433,033
4,153,670	4,395,354	4,418,252	4,433,337
4,167,099	4,397,450	4,418,421	4,433,526
4,190,445	4,397,920	4,419,981	4,433,532
4,192,553	4,398,340	4,420,823	4,434,116
4,301,616	4,399,966	4,420,889	4,434,125
4,310,350	4,400,265	4,422,035	4,434,503
4,335,330	4,400,635	4,422,620	4,434,764
4,345,092	4,401,254	4,422,663	4,434,781
4,348,547	4,401,772	4,422,816	4,435,295
4,353,403	4,402,178	4,423,158	4,435,380
4,353,822	4,403,349	4,423,201	4,435,580
4,354,967	4,405,007	4,423,619	4,435,860
4,363,797	4,405,016	4,424,588	4,435,899
4,364,049	4,407,840	4,425,178	4,436,126
4,364,338	4,409,032	4,425,400	4,436,597
4,364,383	4,409,319	4,425,629	4,436,728
4,366,268	4,410,261	4,425,743	4,436,736
4,368,353	4,410,542	4,426,226	4,438,233
4,373,563	4,410,607	4,428,928	4,438,574
4,376,465	4,411,604	4,428,968	4,439,330
4,378,821	4,411,729	4,429,285	4,439,801
4,381,309	4,411,875	4,429,746	4,441,335
4,381,825	4,411,885	4,430,289	
4,383,216	4,412,239	4,430,311	

Disclaimers

3,996,006.—*Joseph F. Pagano,* Paoli, Pa. SPECIMEN TEST SLIDE. Patent dated Dec. 7, 1976. Disclaimer filed Apr. 13, 1984, by the assignee, *Smithkline Beckman Corp.*

Hereby enters this disclaimer to claims 1 through 10 of said patent.

4,364,839.—*Max P. McDaniel* and *Marvin M. Johnson,* Bartlesville, Okla. CATALYST COMPRISING CHROMIUM ON SILICA/PHOSPHATE SUPPORT. Patent dated Dec. 21, 1982. Disclaimer filed Apr. 16, 1984, by the assignee, *Phillips Petroleum Co.*

Hereby enters this disclaimer to claims 26 and 27 of said patent.

4,389,409.—*George A. Miller,* Maple Glen, Pa. 1-(α-n-BUTYLTHIO-2,4-DICHLOROPHENETHYL)IMIDAZOL-3-YL AND FUNGICIDAL USE THEREOF. Patent dated June 21, 1983. Disclaimer filed Apr. 25, 1984, by the assignee, *Rohm and Haas Co.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,438,261.—*William E. Barnett,* Clearwater, Fla. ANTICOAGULANT SUBSTANCE. Patent dated Mar. 20, 1984. Disclaimer filed Apr. 16, 1984, by the assignee, *Riker Laboratories, Inc.*

The term of this patent subsequent to Sept. 28, 1999 has been disclaimed.

Dedications

3,446,959.—*Franklin Albert Baker,* Carouge, Geneva, Switzerland. METHOD OF AND APPARATUS FOR PRODUCING PARTICLES IN A METASTABLE STATE. Patent dated May 27, 1969. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,477,868.—*Friedrich Grundschober,* Confignon, Geneva, and *Joerg Sambeth,* Carouge, Geneva, Switzerland. METHOD OF MAKING A PROTECTIVE COATING AT THE SURFACE OF A SOLID BODY. Patent dated Nov. 11, 1969. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,555,133.—*Claude Gentaz,* Grand-Lancy, Geneva, Switzerland. METHOD FOR PRODUCING PELLETS. Patent dated Jan. 12, 1971. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,719,261.—*Paul Heinzer,* Geneva and *Alfred Schweizer,* Chene-Bourg/Geneva, Switzerland. PRINTING METHOD AND APPARATUS USING CONDUCTIVE FUSIBLE INK. Patent dated Mar. 6, 1973. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,749,563.—*Valentin Stingelin,* Aire, Geneva, Switzerland. INSTALLATION FOR MAKING SHEET GLASS. Patent dated July 31, 1973. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,826,573.—*Paul Heinzer,* Geneva, Switzerland. METHOD OF RECORDING AND REPRODUCING INFORMATION IN THE FORM OF ELECTRICAL CONDUCTIVITY DIFFERENCES. Patent dated July 30, 1974. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,902,335.—*Gerard Durville,* Geneva, Switzerland. KNITTING MACHINE. Patent dated Sept. 2, 1975. Dedication filed Mar. 26, 1984, by the assignee, *The Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
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	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 12, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-08-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-11-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	2-01-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-03-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-15-81

Expiration of patents: The patents within the range of numbers indicated below expire during May 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,316,556 to 3,323,133, inclusive

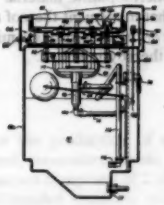
Plant Patents ..... Numbers 2,734 to 2,745 inclusive

REEXAMINATIONS

JUNE 12, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,217,054 (208th)
FLUID MIXING AND DISPENSING SYSTEM
Leonard W. Gacki, White Plains, and Robert E. Daly, Farmingdale, both of N.Y., assignors to Picker Corp., Cleveland, Ohio
Reexamination Request No. 90/000,372, May 5, 1983.
Reexamination Certificate for Patent No. 4,217,054, issued Aug. 12, 1980, Ser. No. 896,556, Apr. 14, 1978.
Continuation of Ser. No. 609,957, Sep. 3, 1975, Pat. No. 4,103,358.
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Int. Cl.³ B01F *15/02, 15/04*
U.S. Cl. 366—150



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **4–18** is confirmed.

Claims **1–3** are determined to be patentable as amended:

3. A method of dispensing film processing chemicals, comprising the steps of:

(a) providing a chemical mixing structure defining developer and fixer mixing chambers;

(b) providing a developer supply structure of a type defining a plurality of volumes each for containing a premeasured quantity of one of a group of film developer constituents;

(c) providing a fixer supply structure of a type defining a plurality of volumes each for containing a premeasured quantity of one of a group of film fixer constituents;

(d) providing a dispensing means carried by at least one of the structures and adapted to dispense developer and fixer constituents from the developer and fixer structures into the respective developer and fixer mixing chambers;

(e) sensing at least one chemical volume condition;

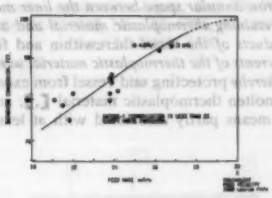
(f) emitting a mixing chamber condition signal in response to the sensed condition to indicate conditions are such that developer or fixer constituents should be dispensed; **[**and,**]**

(g) dispensing chemicals in response to the signal**[**.**]**;

(*h*) *introducing water into said mixing chambers prior to the dispensing of substantial portions of the chemical quantities; and,*

(*i*) *introducing additional water into the mixing chambers after said chemicals are substantially completely dispensed to effect mixing of the water with the chemicals to thereby provide predetermined concentrations of mixed developer and fixer in the respective mixing chambers.*

B1 4,260,840 (209th)
BUTENE-1 CONTAINING FEED PURIFICATION PROCESS (CS-165)
Friedrich H. Puls, Baton Rouge, La., and Klaus D. Ruhnke, Pulheim, Fed. Rep. of Germany, assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Reexamination Request No. 90/000,335, Feb. 28, 1983.
Reexamination Certificate for Patent No. 4,260,840, issued Apr. 7, 1981, Ser. No. 111,245, Jan. 11, 1980.
Int. Cl.³ C07C *5/03*
U.S. Cl. 585—259



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2, 6** and **10** are determined to be patentable as amended:

Claims **3–5** and **7–9**, dependent on amended claims, are determined to be patentable.

New claims **11–13** are added and determined to be patentable.

1. A process for selectively hydrogenating butadiene present as an impurity in a hydrocarbon feed containing at least 30 wt.% butene-1 *to form a butene-1 rich stream containing not more than 500 ppm butadiene* while **[**minimizing**]** *limiting* isomerization of butene-1 to butene-2 *to less than 4%* which comprises contacting the feed with hydrogen in the presence of a solid catalyst comprising palladium on a support wherein the palladium concentration is in the range of from about 0.01 to about 1.0 weight % at a temperature in the range of about 50° to about 90° C., at a pressure sufficient to maintain the hydrocarbons in a mixed liquid-vapor phase, the hydrogen being in a molar excess over theoretical for conversion on the butadiene to butene, of 0.1 to 1.0% based on butene-1, the feed being passed to the catalyst at a mass velocity of more than 1500 lbs./(Sq. ft.×H).

B1 4,366,571 (210th)
ELECTRIC FURNACE CONSTRUCTION
Ronald W. Palmquist, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Reexamination Request No. 90/000,354, Mar. 28, 1983.
Reexamination Certificate for Patent No. 4,366,751, issued Dec. 28, 1982, Ser. No. 243,811, Mar. 16, 1981.
Int. Cl.³ C03B *5/027*
U.S. Cl. 373—30

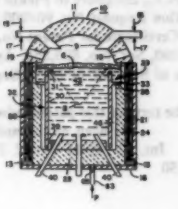
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 61 and 67, having been finally determined to be unpatentable, are cancelled.

Claims 1–3, 62, 63, 66, 93 and 94 are determined to be patentable as amended:

Claims 4–60, 64, 65, 68–92, 95 and 96, dependent on amended claims, are determined to be patentable.

1. A furnace for melting thermoplastic material comprising: a vessel having a bottom wall and a first upstanding peripheral sidewall *for containing thermoplastic material interiorly thereof;* liner means concentrically disposed within said vessel having an upstanding sidewall, *said liner means being* spaced [apart from] *in close proximity with* said first sidewall and extending continuously from [a lower portion] *at least the bottom wall* to near an upper portion of said first sidewall [for containing convection flow of said thermoplastic material] *forming a relatively narrow annular space between the liner means and the sidewall for retaining thermoplastic material and any occurring corrosion products of the vessel* therewithin and for *inhibiting convection currents of the thermoplastic material so retained, said liner means thereby* protecting said vessel from excessive corrosion by the molten thermoplastic material [,]; and peripherally located means partly associated with at least one *of an upper and lower portion* of said vessel and said liner means for *inhibiting flow of thermoplastic material and any occurring corrosion products from the narrow annular space, said flow inhibiting means* providing a relatively cool peripheral zone wherein the



temperature of the thermoplastic material within said zone is sufficiently low so that movement thereof *between the annular space and the interior of the liner means* is minimized and corrosion of the vessel is thereby inhibited.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,599

LOW DENSITY MATTING AND PROCESS

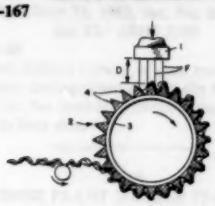
Alfred Rasen; Rolf Vollbrecht, and Klemens Schenesse, all of Oberusburg, Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Original No. 4,252,590, dated Feb. 24, 1981, Ser. No. 703,277, Jul. 7, 1976. Application for reissue Aug. 3, 1981, Ser. No. 291,061

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530499

Int. Cl.³ B32B *31/30*

U.S. Cl. 156—167 17 Claims



1. A process for the production of a low density, transversely strengthened, three-dimensional, undulating peak and valley matting structure composed of a plurality of continuous melt-spun and self-bonded synthetic polymer filaments of a diameter of about 0.1 to 1.5 mm., which process comprises:

melt-spinning said plurality of filaments from a series of closely spaced spinning orifices arranged in rows on the bottom face of a spinning nozzle such that the filaments fall vertically downwardly for deposit onto a moving support intersecting the filaments substantially horizontally at a distance of about 3 to 20 cm. below said nozzle face and having projections which provide a patterned reentrant supporting surface with uppermost salient portions and downwardly opening reentrant areas therebetween;

first directing said filaments onto said uppermost salient portions for support thereon to form the peaks of said matting struture, and then directing said filaments as filamentary loops both longitudinally and transversely into said reentrant areas so as to form the valleys of said matting structure, the filaments from adjacent spinning orifices overlapping and self-bonding with each other at random points of intersection;

cooling and solidifying the freshly deposited and self-bonded filaments while the matting is continuously transported away from the spinning nozzle on said moving support; and

finally removing the cooled and solidified matting from the moving support.

Re. 31,600

Patent Not Issued For This Number

Re. 31,601

COMPOSITE FABRIC COMBINING ENTANGLED FABRIC OF MICROFIBERS AND KNITTED OR WOVEN FABRIC AND PROCESS FOR PRODUCING SAME

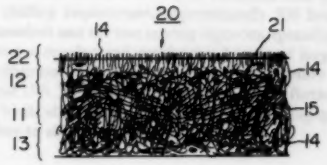
Masataka Ikeda; Tatsuo Ishikawa, and Tsukasa Shima, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Original No. 4,146,663, dated Mar. 27, 1979, Ser. No. 826,007, Aug. 19, 1977. Application for reissue Mar. 20, 1981, Ser. No. 245,777

Claims priority, application Japan, Aug. 23, 1976, 51-99726; Nov. 11, 1976, 51-134708; Nov. 26, 1976, 51-141095

Int. Cl.³ D06N *3/00*

U.S. Cl. 428—93 31 Claims



1. A composite fabric usable as a substratum sheet for artificial leather and comprising a woven or knitted fabric constituent and at least one non-woven fabric constituent in an amount of 100% or more based on the weight of said woven or knitted fabric constituent, said non-woven fabric constituent having a smooth and even outer surface and consisting of numerous extremely fine individual fibers which have an average diameter of 0.1 to 6.0 microns and are randomly distributed and three-dimensionally entangled with each other to form a body of non-woven fabric, said non-woven fabric constituent and said woven or knitted fabric constituent being superimposed and bonded together, to form a body of composite fabric in such a manner that a portion of said extremely fine individual fibers in said non-woven fabric constituent penetrate into the inside of said woven or knitted fabric constituent and are entangled with a portion of fibers in said woven or knitted fabric constituent, and the bonding strength between said woven or knitted fabric constituent and said non-woven fabric constituent being at least 30 g/cm.

PLANT PATENTS

GRANTED JUNE 12, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,243

PEAR TREE 'GOLDEN RUSSET BOSC'

Sumio Fukui, 5335 Collins Rd., Hood River, Oreg. 97031

Filed May 28, 1982, Ser. No. 383,116

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree as illustrated and described herein, distinguished principally from its parent, the Bosc variety, by the over-all, orange-tinted, unbroken russet formation of its fruit skin.

5,244

ROSE PLANT 'JACRUS 77-3372'

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Aug. 2, 1982, Ser. No. 404,601

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of yellow color, without reddish tints, large receptacles, red purple styles, upright bush and strong fragrance.

5,245

NECTARINE TREE—MAY GLO

Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Dec. 14, 1982, Ser. No. 449,604

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree with a low winter chilling requirement, approximately 300 hours below 45° Fahrenheit and the tree having vigorous, spreading growth and being a regular and productive bearer of large, yellow flesh, clingstone fruit, maturing 3 to 4 days before Armking Nectarine U.S. Plant Pat. No. 2,943); the fruit is further characterized by its attractive red skin color, good eating quality and the ability to ship to long distance markets.

PLANT PATENTS

CLAIMED JUNE 12, 1934

Illustrations in color printed on glossy coated paper. Not available in reprint form.

PATENTS

GRANTED JUN. 12, 1984

ERRATA

For CLASS	See PATENT NO.
251–010	4,453,295
060–039	4,453,323
446–046	4,453,338
446–227	4,453,339
446–437	4,453,340
446–450	4,453,341
446–037	4,453,342
188–282	4,453,638
346–216	4,453,744
043–057	4,453,843
405–259	4,453,845
405–299	4,453,846
366–098	4,453,867
525–132	4,454,271
536–001	4,454,289
536–018	4,454,290
548–491	4,454,291
548–491	4,454,292
526–106	4,454,293
526–344	4,454,294
527–311	4,454,295
528–075	4,454,296
528–111	4,454,297
528–137	4,454,298
546–337	4,454,324

PATENTS

GRANTED JUN. 12, 1984

ERRATA

GRANTED JUNE 12, 1984

GENERAL AND MECHANICAL

4,453,271

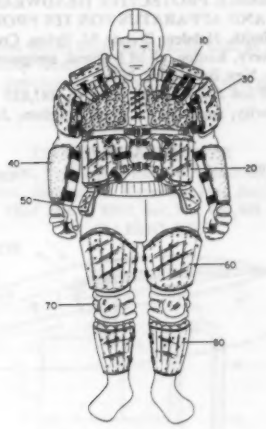
PROTECTIVE GARMENT

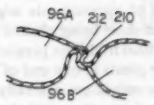
Byron A. Donzis, Houston, Tex., assignor to American Pneumatics Co., Houston, Tex.

Division of Ser. No. 80,095, Sep. 28, 1979, Pat. No. 4,370,754, which is a continuation-in-part of Ser. No. 928,425, Jul. 27, 1978, Pat. No. 4,217,705, which is a continuation-in-part of Ser. No. 842,250, Oct. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 774,276, Mar. 4, 1977, abandoned. This application Sep. 29, 1982, Ser. No. 427,430

Int. Cl.³ A41D *13/00*

U.S. Cl. 2—2 **79 Claims**





1. A protective garment for protecting the body comprising:

two superimposed plies of a lightweight, non-elastic fluid-impervious material having the adjacent surfaces of said material sealed around the periphery thereof to form a garment which does not distend;

said adjacent surfaces are also sealed at regions internally of said periphery to define a plurality of fluid chambers and internal and peripheral fluid passageways; said fluid passages having a cross-sectional area smaller than said fluid chambers;

at least some of said internal fluid chambers being fluidly communicable with adjacent fluid chambers by means of said fluid passageways; folds of said material being located at said fluid passages to baffle flow between said adjacent fluid chambers, the folds at said peripheral fluid passages substantially blocking flow therethrough until an external force is applied to said garment flexing said peripheral folds apart to permit flow through said peripheral fluid passages;

said folds providing valving means at said fluid pasageways restricting fluid flow from one fluid chamber to another to cause pressure equalization between said adjacent fluid chambers and to provide a valving effect sufficient to prevent sudden surges of fluid flow from one fluid chamber to another upon the impact of sudden forces placed on said chambers.

4,453,272

BASEBALL GLOVE

Ichio Miyake, Kawanishi, and Kazunori Misono, Toyonaka, both of Japan, assignors to Mizuno Corporation, Osaka, Japan

Filed May 27, 1982, Ser. No. 382,710

Claims priority, application Japan, May 30, 1981, 56-79537[U]

Int. Cl.³ A41D *13/10*

U.S. Cl. 2—19 **7 Claims**

1. A baseball glove comprising: a pair of sheaths to receive a thumb and an index finger; a web attached to and extending between said sheaths; the web made of a tinted transparent material having shock resistance.

4,453,273

NECKTIE PROTECTOR

H. George Gerrick, 200 Warwick Dr., Pittsburgh, Pa. 15241

Filed Dec. 1, 1982, Ser. No. 445,924

Int. Cl.³ A41D *27/12*

U.S. Cl. 2—46 **6 Claims**

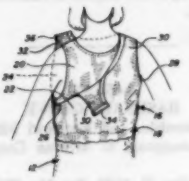
1. A necktie protector being free of wires, buttons, snaps, and strings consisting of a flat flexible plastic envelope sized to just enclose the portions of a necktie hanging from the knot therein and having two identical elongate flat plastic faces joined at the long edges thereof and not being joined at the short edges thereof and there being flat plastic tabs extending centrally from two adjacent unjoined edges and being integral with the flat plastic faces.

4,453,274

ATHLETIC UPPER-BODY GARMENT

William R. Allen, 625 College Dr., Reno, Nev. 89503

Filed Apr. 26, 1983, Ser. No. 488,726
Int. Cl.[3] A41D *1/04;* A41B *1/00*
U.S. Cl. 2—102 10 Claims



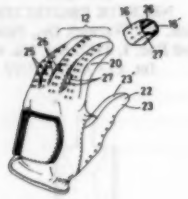
1. An athletic upper-body garment comprising inner and outer shells for embracing a shoulder, back, and chest area of a wearer, the shells being integrated around a midriff section of the garment, the outer shell comprising a front panel and a rear panel, the panels being movable between a raised position wherein the panels substantially cover the inner shell and a lowered position wherein the panels hang down from the midriff section, the garment presenting a first characteristic outer surface appearance when the panels are in raised position and a second characteristic outer surface appearance when the panels are in lowered position, and the garment further including means for releasably retaining the panels in the raised position.

4,453,275

GOLF GLOVE

Toshiyuki Kawada, 360, Matsubara, Shirotori-cho, Okawa-gun, Kagawa, Japan

Filed Jun. 8, 1982, Ser. No. 386,418
Claims priority, application Japan, Sep. 25, 1981, 56-142759
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—161 A 3 Claims



1. A golf glove comprising:

a back portion having a plurality of finger portions including an index finger portion, a middle finger portion, a ring finger portion and a little finger portion;

a palm portion having a plurality of finger portions including an index finger portion, a middle finger portion, a ring finger portion and a little finger portion and being formed with an opening for a thumb portion, said finger portions of the palm portion being shorter in length than the finger portions of the back portion to facilitate the bending of the fingers of the wearer when gripping a golf club, said finger portions of the palm portion being joined to said finger portions of the back portion, a sewn together index finger cut being formed along the edges of and between the index finger portion of said palm portion and the index finger portion of said back portion, said index finger cut extending substantially the full length of the finger portion of at least one of said palm portion and said back portion;

a plurality of fourchettes sewn to both edges of the ring finger portions and the middle finger portions of said back and palm portions and to the inner edge of the little finger portions and the index finger portions of said back and palm portions; and

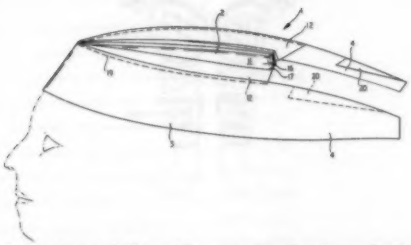
a thumb portion having a back part and a palm part, said back part being shorter in length than said fi part so that said thumb portion bends rearwardly away from the other fingers and the golf club when gripping the golf club, said thumb portion being sewn to said palm portion in said opening, a sewn together thumb cut being formed between the palm part of said thumb portion and the back part of said thumb portion, said thumb cut extending substantially the full length of at least one of the back part and the palm part of said thumb portion.

4,453,276

DISPOSABLE PROTECTIVE HEADWEAR AND PROCESS AND APPARATUS FOR ITS PRODUCTION

Rory J. M. Smith, Hebden; Brenda M. Sykes, Cross Hill, and Roger S. Terry, Kenton, all of England, assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 29, 1981, Ser. No. 287,833
Claims priority, application United Kingdom, Jul. 31, 1980, 8025014
Int. Cl.[3] A42B *1/04*
U.S. Cl. 2—195 15 Claims



1. An item of disposable protective headwear having a crown-piece formed from a rectangular sheet of nonwoven fabric having a pair of opposed side edges and a pair of opposed end edges, said sheet being pleated to form a plurality of pleats along longitudinal fold-lines parallel to said opposed pair of side edges, all the pleats at one end of the pleated sheet are secured together, but only some, centrally located, pleats at the other end are secured together, and the opposed side edges being secured to a head-band of nonwoven fabric provided with tie-strings.

4,453,277

PROTECTIVE HELMET

Philip E. Durand, Hudson, and Lawrence R. McManus, Lynn, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

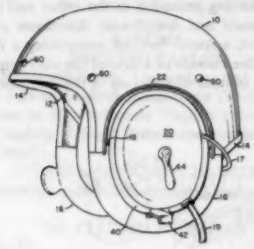
Filed Aug. 20, 1982, Ser. No. 410,159
Int. Cl.[3] A42B *3/02*
U.S. Cl. 2—416 15 Claims

1. A protective helmet comprising:

shell means, said shell means having a pair of oppositely disposed earcup receiving openings;

an earcup positioned in each of said shell means openings, said earcups being sized relative to said openings to permit a limited degree of relative rotation therebetween, said earcups further being individually movable in said shell means in a first direction whereby the helmet interior spacing between at least portions of said earcups may be varied;

ratchet means affixed to each of said earcups for stepwise adjusting the position of said earcups in said first direction,



said ratchet means each cooperating with an edge portion of an earcup receiving opening; and

adjustable suspension means mounted in said shell means.

4,453,278

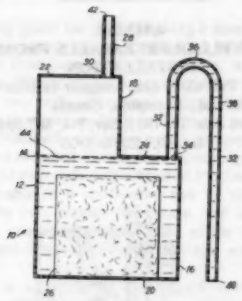
CHEMICAL DISPENSER

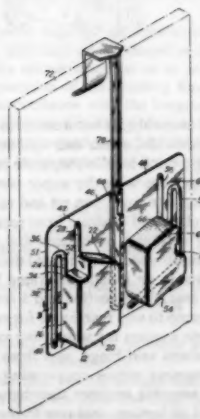
Roger H. Doggett, Natick, and Edward S. Shanley, Winchester, both of Mass., assignors to Knomark, Inc., Jamaica, N.Y.

Filed Jan. 6, 1983, Ser. No. 456,109

Int. Cl.³ E03D *9/02*

U.S. Cl. 4—228 **21 Claims**





1. A chemical dispenser adapted to dispense a predetermined volume of a chemical solution into a body of liquid in which said dispenser is immersed in response to the level of said body of liquid being lowered from a first elevation to a second elevation, said dispenser comprising:

(a) a container capable of holding both a quantity of a chemical in solid form and a chemical solution formed therefrom;

(b) an air vent in fluid communication with the upper portion of said container, said air vent extending upwardly and terminating above the top of said container; and

(c) a siphon in fluid communication with said container for conveying a volume of said chemical solution from said container into said body of liquid in which said dispenser is immersed, said siphon commencing at an entry port in said container which is located below the top of said container and extending upwardly therefrom to a point above the top of said container but below the top of said air vent and thereafter turning in a downward direction as a result of an inverted U-shaped bend therein to terminate at a point below said entry port in said container, whereby said siphon delivers a volume of chemical solution to said body of liquid in response to the level of said body of liquid being lowered from a first elevation to a second elevation and delivers a substantially equal volume of liquid from said body of liquid through said siphon to said container when said body of liquid is raised from said second elevation to said first elevation.

4,453,279

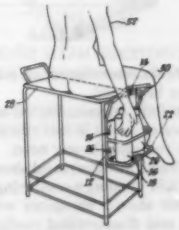
BATH RACK ASSEMBLY

Hartley Logsdon, 125 E. Lakewood, West Palm Beach, Fla. 33405

Filed Dec. 22, 1982, Ser. No. 452,029

Int. Cl.³ A47K *3/00*

U.S. Cl. 4—559 **14 Claims**



1. A bath rack assembly for housing and retaining the bathing materials of a bather for use in combination with a bather's bath seat appliance, comprising:

a means connected to said bath rack assembly for housing and retaining the bathing materials of a bather seated on the bath seat appliance;

an attachment means connected to said means for attaching said means to the bath seat appliance of a bather so that the bathing materials of the bather are within reach of the bather while seated on the bath seat appliance; and

a draining means for providing for the drainage of bath water from said bath rack assembly, said drainage means connected to said means.

4,453,280

PORTABLE SHOWER

John P. Greenleaf, 1421 E. Flower, Phoenix, Ariz. 85014

Filed Jan. 24, 1983, Ser. No. 460,254

Int. Cl.³ A47K *3/23*

U.S. Cl. 4—599 **5 Claims**

1. A portable shower container having

a disassembled configuration in which said container is closed with shower components stored therein, and

an assembled configuration utilized by an individual for showering,

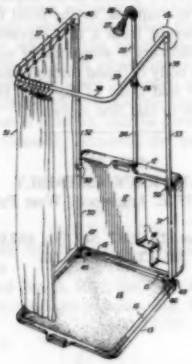
said portable shower container including

(a) a generally rectangular first section generally horizontally disposed when said shower container is in said assembled configuration;

(b) a generally rectangular second section pivotally attached to said first section and vertically disposed generally at a right angle with respect to said first section when said shower is in said assembled configuration;

(c) a support frame including a plurality of interconnected elongate members for carrying a shower curtain, said frame being fixedly, detachably secured to said first and second sections when said shower container is in said assembled configuration such that said first section is maintained in said right angle relationship with respect to said second section;

(d) a generally enclosed water container carried in said second section;



(e) conduit means interconnecting said water container and said shower head; and,

(f) a pump in fluid communication with said container for directing water stored in said container through said conduit means and said shower head;

said support frame members, said shower head and at least a portion of said conduit means being stored and carried in said portable shower container when said shower container is in said disassembled configuration,

said first section including at least one aperture adapted to fixedly, detachably receive an end of one of said elongate members of said support frame when said shower container is in said assembled configuration, said one of said elongate members being generally vertically oriented, and

said second section including clip means for detachably securing at least one of said elongate members of said support frame in position adjacent said second section, said one of said elongate members secured by said clip means being generally vertically oriented.

4,453,281

BEE HIVE FRAME SPACER

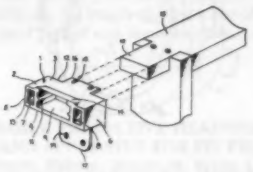
Francis X. Shanabarger, 4227 E. 250 North, Kokomo, Ind. 46901

Filed Sep. 3, 1982, Ser. No. 414,707

Int. Cl.³ A01K *47/02*

U.S. Cl. 6—2 A **3 Claims**

1. A bee hive frame spacer comprising a tubular body having a pair of interior side walls extending lengthwise thereof, a pair of exterior side walls extending lengthwise thereof, a flat top extending from the outside of a first of the said pair of exterior side walls to the outside of a second of the said pair of exterior side walls and extending the length of the said body and fixed to and integral with the top of each of the said exterior side walls and fixed to and integral with the top of each of the said interior side walls and having provided at one end thereof a raised tab and having provided at the other end thereof and extending rearward and lengthwise therefrom a horizontal mounting bracket, a spacer bottom comprising a flat member extending from the outside of a first of the said pair of exterior side walls to the outside of a second of the said pair of exterior



side walls and extending rearward from the front of the said body and a lug portion integral with the said flat member and extending angularly downward and rearward from the said flat member, the said spacer bottom being fixed to and integral with the bottom of each of the said exterior side walls and fixed to and integral with the bottom of each of the said interior side walls and having provided at the rear of the said spacer bottom and extending downward therefrom a vertical mounting bracket.

4,453,282

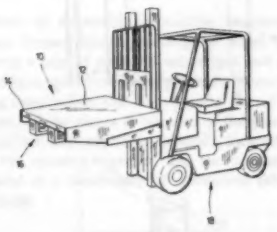
DOCK LEVELLER RELEASABLE FROM DOCK INSTALLATION

Kurt K. Larsen, Pell City, Ala., assignor to Blue Giant Equipment of Canada Ltd., Brampton, Canada

Filed Jun. 11, 1982, Ser. No. 387,514

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.1 **6 Claims**



1. A dock leveller assembly for securement in an open ended pit having parallel sidewalls, a rear end wall and bottom, said assembly comprising a dock leveller, separate rear securement means in fixed engagement with the upper portion of the pit endwall and extending into said open pit and releasably securable to said dock leveller, and separate front securement means in fixed engagement with said pit bottom and extending into said open pit and releasably securable to said dock leveller, said dock leveller comprising an integrated frame having a front frame portion and a rear frame portion and a ramp including a hinge securing said ramp to said rear frame for swinging movement, said front frame portion for supporting components for swinging the ramp about said hinge, said front frame portion and said front securement means cooperating to removably receive at least one securing member therebetween at a position spaced from said pit bottom, said rear frame portion cooperating with said separate rear securement means to removably receive at least one securing member therebetween at a position spaced from said pit endwall, said securing members when

received by said frame portions and said separate securing means fixing said dock leveller in said pit and permitting removal of said dock leveller from said pit by removing said securing members.

4,453,283

DECKING PALLET

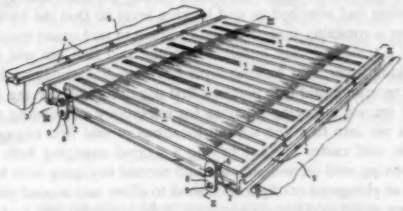
James P. Fitzgerald-Smith, Ossemsley, and Michael Willis, Binstead, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 5, 1982, Ser. No. 432,813

Claims priority, application United Kingdom, Oct. 5, 1981, 8130027

Int. Cl.³ E01D *19/12, 15/12*

U.S. Cl. 14—73 **3 Claims**



1. A decking pallet for use in decking a transportable girder bridge of a type constructed form girder sections connected end to end to form two parallel trackways, which trackways are conjointly decked with a series of transverse decking units each having two ends respectively engageable with the two trackways, said girder sections including a series of locating recesses longitudinally spaced apart along upper edges of the girder sections and each of said decking units being provided at each of the said two ends with a hooked locating flange respectively engageable in a confronted pair of the said locating recesses in the two parallel trackways, and further having a through bore extending adjacent each of the two said ends in the longitudinal direction of the trackways, wherein the pallet comprises:

a plurality of said decking units serially disposed with their through bores aligned so as to form two parallel channels,

a tiebar disposed throughout each channel havng two ends extending beyond each of the two outermost units respectively,

an annular spacer disposed interjacent each sequential pair of decking units and circumjacent each tiebar, the spacer being axially dimensioned so as to provide that the longitudial separation of the locating flanges of the decking units is in accordance with the longitudinal separation of the locating recesses in the girder sections, and

a slinging means attached to each of the said ends of the two tiebars so as to be retractable below deck level.

4,453,284

CAR WASHING MACHINE

Robert H. Schleeter, 6358 Willow La., Minneapolis, Minn. 55430

Filed Jun. 17, 1982, Ser. No. 389,417

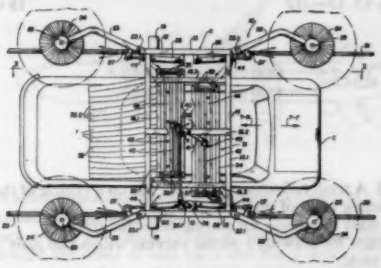
Int. Cl.³ B60S *3/04*

U.S. Cl. 15—97 B **8 Claims**

1. A car washing apparatus movable along the floor and over a stationary car, comprising

a mobile arch frame having upright sides spaced from each other and supported from the floor for travel along the stationary car, the arch frame having a car spanning top connecting the upright sides together and passing over the top of the car during such travel, and the frame having reversible means producing travel of the frame over the car first in one direction and then in the opposition direction,

car scrubbing means on the frame and including a top scrubber beneath said spanning top for scrubbing the hood and top of the car, the top scrubber having an oscillating rack on the arch frame and a multiplicity of cloth felt-like scrubbing strips hanging downwardly from the oscillating rack to engage and scrub the car, the scrubbing means also including spray nozzles directing cleaning solution at the scrubbing strips and the adjacent car, the scrubbing strips



having obverse and reverse faces facing generally forwardly and rearwardly relative to the travel of the mobile arch frame, the obverse faces engaging and scrubbing the car during travel of the frame in said one direction and the reverse faces engaging and scrubbing the car during travel of the frame in said opposite direction whereby the obverse and reverse faces of the oscillating strips are alternately rinsed to be cleaned and used for scrubbing the surfaces of the car as the mobile frame is first moved in said one direction and then reversed and moved in said opposite direction.

4,453,285

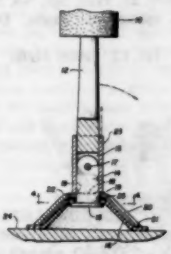
RINSING BRUSH WITH SUCTION BASE

Victor J. van Rosberg, 173 Margÿnenenk, 7415 JV Deventer, Netherlands

Filed Jan. 25, 1983, Ser. No. 461,112

Int. Cl.³ A46B *15/00*

U.S. Cl. 15—164 **7 Claims**



1. A glassware cleaning brush comprising a brush body portion having an arm extending from one end thereof, a connector element pivotally connected with the arm at a point spaced from the end of the arm remote from the brush body portion, an elastic suction cup secured to said connector element, a substantially rigid reaction cup movably held on the connector element between said suction cup and the pivot axis of said arm and having a top wall which is cammingly engaged by the end of the arm remote from the brush body portion when the arm is swung on its pivot to a position coaxial with

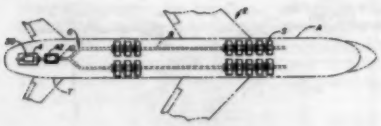
the connector element to thereby depress the rigid reaction cup into clamping engagement with the marginal portion of the suction cup while simultaneously the suction cup is stretched away from an engaging surface.

4,453,286

VACUUM INDUCED TRASH COLLECTION SYSTEM

Clarence W. Wieland, 1531 Hyde St., #8, San Francisco, Calif. 94109

Filed Apr. 21, 1983, Ser. No. 487,374
Int. Cl.³ A47L *5/38*
U.S. Cl. 15—313 **15 Claims**



15. A trash collection system for use on a vehicle of the type including rows of seats comprising:

a main receptacle for storing collected trash;

means for drawing a partial vacuum within said main receptacle;

a vacuum line network including a plurality of feeder lines and a main collection line fluidly coupling said main receptacle with said feeder lines;

said vacuum feeder lines including sealable lid assemblies at an end of said feeder line, said lid assembly operable to admit trash into said feeder line whereupon the trash is drawn through said vacuum line network to be deposited into said main receptacle, said lid assembly including a removable cap for substantially sealing said feeder line end when fitted thereon and for providing generally unhindered access to said feeder line end when removed therefrom; and

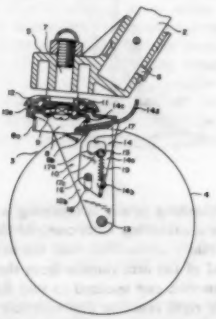
means for dosing liquid into said main collection line at a point between all of said feeder lines and said main receptacle to extinguish lit trash drawn through said vacuum line network.

4,453,287

CASTER FOR BABY CARRIAGES

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Nov. 25, 1981, Ser. No. 324,679
Claims priority, application Japan, Dec. 17, 1980, 55-182019[U]
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—35 R **7 Claims**



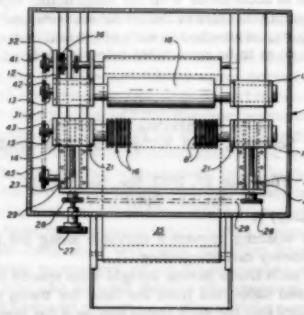
1. A caster for baby carriages having front leg means and rear leg means defining a given movement direction of the carriage, said caster comprising: a locking body fixed to the lower end of at least one of said front and rear leg means, said locking body having at least one notch which is defined by a pair of opposing walls each extending in a vertical direction; a caster bracket installed for rotation about a vertical axis; a ground-engaging wheel installed on said caster bracket for rotation about a horizontal axis; a locking lever attached to said caster bracket for rotation only about a horizontal axis, said locking lever having an engaging tongue for engagement with said notch of said locking body; and holder means for holding said locking lever engaged with and disengaged from said notch of said locking body, said at least one notch and said notch engaging tongue being so oriented relative to each other and relative to said ground-engaging wheel that the tongue can engage the notch when said wheel is aligned with said movement direction for preventing a wheel locking when the wheel is not aligned with said movement direction and wherein said holder means comprise a first pin horizontally extending and attached to said caster bracket; a second pin horizontally extending and attached to said locking lever so that the locking lever is rotatably supported with respect to said caster bracket; and a tension spring installed between said first pin and said locking lever; said locking lever having a first engaging hole for receiving said first pin; said first engaging hole having first and second engaging portions for selectively positioning said first pin into first and second locations in said first engaging hole; said caster bracket having a second engaging hole for receiving said second pin; and said second engaging hole having an elongated configuration so as to allow said second pin to move along said second engaging hole; whereby said locking lever, when said first pin is located at said first engaging portion of the first engaging hole, renders said engaging tongue to be disengaged from said notch, and said locking lever, when said first pin is located at said second engaging portion of the first engaging hole, causes said engaging tongue to be engaged with said notch, said respective states of said locking lever being stabilized by the tension of said tension spring, and wherein the change between said states of said locking lever is achieved by rotating said locking lever while said second pin is moved in said second engaging hole against the resilience of said tension spring.

4,453,288

JAM RESISTANT APPARATUS FOR MACERATING MEAT

Salvatore J. Lobiondo, 12 Decamp Ct., West Caldwell, N.J. 07006, and Joseph V. Lobiondo, 79 Winding Rd., Bloomfield, N.J. 07003

Continuation of Ser. No. 105,098, Dec. 19, 1979, abandoned. This application Feb. 25, 1982, Ser. No. 352,308
Int. Cl.³ A22C *9/00*
U.S. Cl. 17—26 **3 Claims**



1. A jam resistant macerator for macerating meat along one selected surface while preserving the appearance of the other

surfaces, comprising: a frame; a first shaft rotatably mounted upon said frame; a roller having a generally smooth continuous surface arranged on said shaft; a second shaft rotatably mounted on said frame; a plurality of macerating discs and meat crushing rings arranged on said second shaft, the peripheries of the discs being disposed in spaced relation to said smooth surface, said macerating discs having radial slots in their periphery presenting radial and peripheral edges for macerating the meat, said crusher rings being mounted between macerating discs for simultaneously crushing the meat between said rings and said surface of said smooth roller thereby facilitating vigorous maceration over the selected surface of the meat to be macerated, said crushing rings extending radially to adistance such that their periphery is at the deepest point of said slots in the macerating discs, said crushing rings acting with said smooth roller to urge the meat through the macerator while avoiding occasional jamming action; means for driving said first and second shafts in counter-rotation so that meat sections entering the space between said smooth surface and said plurality of discs and rings will be urged by the smooth roller into moving contact with said macerating discs and crushing rings so as to be pulled therethrough; and comb means arranged to project into the spaces between adjacent discs for stripping the meat away from said discs.

4,453,289

HOSE CLAMP STRUCTURE AND HOSE CONSTRUCTION EMPLOYING SAME

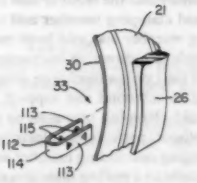
Donald L. Kleykamp; Steven G. McCord, both of Washington Township, Montgomery County, Ohio; William J. LiVolsi, Upper Wakefield Township, Bucks County, Pa., and Raymond L. Trueblood, Bethel Township, Miami County, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 137,165, Apr. 4, 1980, Pat. No. 4,306,740. This application Dec. 7, 1981, Ser. No. 327,990

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ F16L *33/22*

U.S. Cl. 24—20 TT **40 Claims**



1. In a hose construction comprising a hose made primarily of polymeric material and having opposite hose ends, a hose clamp structure connected to at least one of said hose ends, the improvement wherein said hose clamp structure comprises a pair of interconnectible members each having a plurality of teeth adapted for interconnecting engagement, said members upon being interconnected around said one hose end extending substantially over a first arcuate length of said one hose end with a second arcuate length of said one hose end completing the remaining 360 degree circumference of said one hose end, each of said members being defined as a separate part, auxiliary connecting means connecting each member to said one hose end whereby each said auxiliary connecting means initially was separate from its respective member, said members when connected to said one hose end employing said second arcuate length of said one hose end as clamping means, said connected members and second arcuate length cooperating to define an annular construction enabling said one hose end to be clamped around an associated structure.

4,453,290

LEVER-OPERABLE FASTENER

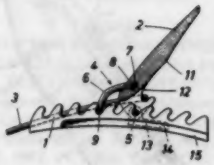
Tilo H. Riedel, Salzburg, Austria, assignor to Sesamat Anstalt, Schaan, Liechtenstein

Filed Nov. 20, 1980, Ser. No. 208,627

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.³ A43C *11/00*; A44B *21/00*

U.S. Cl. 24—70 SK **13 Claims**



1. In a lever-operable fastener for pulling two parts of a shoe toward each other, comprising

a rack which is secured to one of said parts and extends toward the other of said parts and has a series of teeth spaced apart along said rack and tooth spaces between said teeth,

a tensioning lever which is adapted to be swung up from and down to said rack and carries a first detent element adapted to enter one of said tooth spaces so as to define a first fulcrum for said lever, and

a tensile element which is connected to the other of said parts and adapted to exert tension on said lever at a point spaced from said first detent element,

said lever being movable along said rack in a predetermined tensioning direction to apply a higher tension through the intermediary of said tensile element and rack to said two parts,

the improvement residing in that

said tensioning lever carries a second detent element, which is spaced along said rack from said first detent element and adapted to enter one of said tooth spaces so as to define a second fulcrum for said lever.

one of said detent elements is adapted to enter one of said tooth spaces and to define a fulcrum for said lever as the latter is swung up, and to disengage and be clear of said rack as said lever is swung down,

the other of said detent elements is adapted to enter one of said tooth spaces and to define a fulcrum for said lever as the latter is swung down, and to disengage and be clear of said rack as said lever is swung up, and

said tensioning lever is adapted to move each of said detent elements when the same is clear of said rack into a succeeding one of said tooth spaces in said tensioning direction as said tensioning lever is swung up and swung down.

4,453,291

GRIP FOR PULLING FIBER OPTIC CABLE

Alfred W. Fidrych, Stonington, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jun. 21, 1982, Ser. No. 390,307

Int. Cl.³ F16G *11/00*

U.S. Cl. 24—115 N **16 Claims**

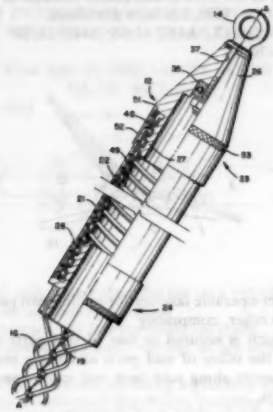
1. A grip for elongated objects such as cables and the like, comprising:

a tubular body for housing one end of the object, said body having opposite forward and rearward end portions and a longitudinal axis and being elongated in a direction parallel to said axis,

said body including a substantially flexible wall portion between said forward and rearward end portions for bending in directions transverse to said longitudinal axis and providing therein a chamber elongated in a direction

parallel to said longitudinal axis and having an open end communicating with the rearward end portion of said body,

means coupled to the forward end portion of said body for applying tensile force to said body; and



a gripping device coupled to the rearward end portion of said body for holding the object in said chamber while tensile force is applied to said means.

4,453,292

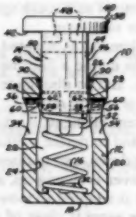
CORD LOCK

John A. Bakker, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 30, 1982, Ser. No. 412,429

Int. Cl.³ F16G 11/00

U.S. Cl. 24—115 G 3 Claims



1. A cord lock having only three parts comprising an integrally molded one-piece cylinder of a resilient material having an open end and an integral closed end, said cylinder having a pair of aligned lateral apertures therein for receipt of a cord or the like, a piston axially movable in said cylinder and having a cross bore therein alignable with said apertures, said cylinder and said piston each having two diametrically spaced chordal flats for relative rotational alignment, wherein said lateral apertures and said piston cross bore extend through respective flats, a pair of lead-in lramps formed inwardly of said cylinder's open end on said cylinder's two diametrically spaced flats, a pair of teeth formed on said piston's two diametrically spaced flats adjacent the entering end of said piston, each of said teeth extending outwardly of said respective chordal flats and having a shallow slope on its lower outer portion and an upper shoulder facing away from said entering end, and a spring acting between said cylinder and said piston resiliently tending to move said piston out of said cylinder and to misalign said bore and said apertures to thereby clamp a cord between said cylinder and said piston, wherein said pair of teeth rides in said lead-in ramps as said piston is assembled into said cylinder by being moved axially towards said closed end of said cylinder to cam over said lead-in ramp and said shoulders of said pair of teeth snap into the respective pair of aligned lateral apertures to maintain said cylinder and said piston in assembled relation.

4,453,293

CLAMPING ARRANGEMENT FOR CORONA DISCHARGE WIRE

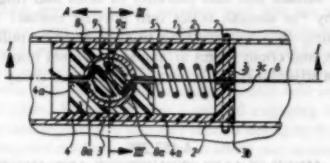
Konrad Brückl, and Georg Fryda, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,634

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039752

Int. Cl.³ F16G 11/00

U.S. Cl. 24—131 C 8 Claims



1. A clamping arrangement for clamping a corona discharge wire in electrophotographic copying apparatuses, wherein the wire has two end portions of which one end portion is connected with a current supply and the other end portion is not connected therewith, the clamping arrangement comprising clamping means which includes a bush member having an inner surface provided with a plurality of teeth and a clamping member located inside such bush member and having an outer surface provided with a plurality of teeth, so that the other end portion of the corona discharge wire, which is not connected with the current supply, can be clamped between the teeth of said bush member and the teeth of said clamping member upon rotation of said clamping member and solely by interaction of said clamping member and said bush member; a sliding member displaceable in a direction corresponding to a direction of elongation of the corona discharge wire in clamped condition and arranged to surround and support at least said clamping member of said clamping means so as to perform supporting functions without performing clamping functions; a spring member engaging said sliding member and acting in a direction which is opposite to a pulling direction of the corona discharge wire; and means for guiding said sliding member during its displacement in the direction corresponding to the direction of elongation of the corona discharge wire in clamped condition and including a stationary elongated U-shaped housing and an elongated bearing body inserted in said housing and having guides for guiding said sliding member with friction operative for absorbing vibrations.

4,453,294

ENGAGEABLE ARTICLE USING PERMANENT MAGNET

Tamao Morita, 47-1, 6-chome, Arakawa, Arakawa-ku, Tokyo, Japan (116)

Continuation of Ser. No. 309,762, Oct. 8, 1981, abandoned, which is a continuation of Ser. No. 89,134, Oct. 29, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 477,838

Int. Cl.³ A44B 17/70; A44C 13/10

U.S. Cl. 24—303 6 Claims

1. A magnetic fastener comprising: a magnetic member having a substantially circular cross-section, a first side and a

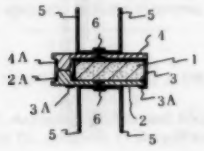
second side of opposite polarities, and a substantially cylindrically shaped peripheral edge;

a cover member of non-magnetic material configurationally conforming and adjacent to said second side and said peripheral edge of said magnetic member so that it encloses said magnetic member except said first side;

a first ferromagnetic material member positioned against said first side of said magnetic member and having at least two prongs rigidly secured thereto and extending outwardly therefrom for attaching said first ferromagnetic member to a first surface;

means for securing edge portions of said first ferromagnetic material member to regions of said cover member of non-magnetic material in the vicinity of said peripheral edge; and

a second ferromagnetic material member removably positioned against said non-magnetic cover member adjacent said second side comprising:



a base plate adjacent said non-magnetic plate, and

an elongated projection extending from said base plate adjacent the periphery therof toward and contacting said first ferromagnetic material member, and a plurality of prongs rigidly secured to said base plate and extending outwardly therefrom for attaching said second ferromagnetic member to a second surface, and futher comprising a concave arcuately shaped groove in said peripheral edge of said magnetic member extending between said first and second sides and a concave arcuately shaped groove in the peripheral edge of said cover conforming thereto, said elongated projection being substantially commensurate in shape with and adapted to be received in said groove in said cover in radially spaced relationship thereto and having a substantially circular cross-section of greater dimension than the thickness of said base plate.

4,453,295

DEVICE FOR PINCHING-OFF HOSES

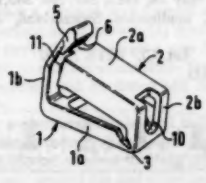
Max Laszczower, Basel, Switzerland, assignor to Solco Basel AG, Basel, Switzerland

Filed Jun. 9, 1982, Ser. No. 386,490

Claims priority, application Switzerland, Jun. 17, 1981, 4000/81

Int. Cl.³ F16K *7/06*

U.S. Cl. 251—10 **4 Claims**



1. A clamping device for regulating the flow of liquid passing through a flexible hose, comprising two clamping stirrups gripping the hose therebetween, the clamping stirrups being bendably connected with each other at one end thereof and carrying interacting securing elements at the opposite end thereof, said securing elements being releasable and being adapted to anchor the clamping stirrups in different positions, and further comprising in said both ends of the clamping stirrups aligned passages for receiving the hose, said clamping stirrups having a pair of interacting clamping edges arranged at right angles to a hose extending through said passages for changing the cross-section of the hose, and also two additional spaced pairs of clamping ribs extending in the direction of said passages, said clamping ribs being adapted to change the cross section of the hose when the hose extends across said clamping device at a right angle to the direction of said passages.

4,453,296

APPARATUS FOR PRESSING WORKPIECES OF ABSORBENT MATERIAL, PARTICULARLY TAMPONS FOR FEMININE HYGIENE

Axel Friese, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Carl Hahn, G.m.b.H., Dusseldorf, Fed. Rep. of Germany

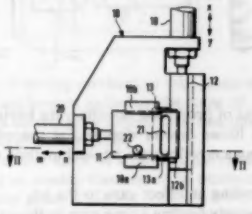
PCT No. PCT/DE81/00231, 371 Date Aug. 13, 1982, 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02335, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 21, 1981, Ser. No. 414,257

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049580

Int. Cl.³ A61F *13/20*

U.S. Cl. 28—119 **6 Claims**



1. In an apparatus for compressing a preformed workpiece into a cylindrical tampon of the kind having an insertion end and a withdrawal end and having a withdrawal cord affixed to said withdrawal end wherein said workpiece and the withdrawal tape is introduced into a pressing device and compressed radially, the improvement comprising:

said pressing device comprising a pressing chamber having longitudinally extending walls movable with respect to each other for radially compressing said workpiece and having a first open longitudinal end and a second longitudinal end, said walls of said chamber extending longitudinally for a length sufficient to accommodate the workpiece and its extended withdrawal cord;

a delivery device adapted for reciprocating movement transversely to the longitudinally extending chamber, said delivery device having a transmitting channel and a receiving channel and positioned with respect to the pressing chamber to be reciprocated to alternately axially align each of said channels with said chamber to alternately transmit a workpiece to and alternately receive a compressed workpiece from the first open end of said pressing chamber;

means for reciprocating said delivery device to axially align said transmitting channel with said chamber;

means for urging a workpiece from said transmitting channel into said chamber and toward said second longitudinal end;

means for moving the walls of said chamber to radially compress said workpiece;

means for reciprocating said delivery device to axially align said receiving channel with said chamber; and

means for ejecting said compressed workpiece into said receiving channel and pressing the withdrawal end of said

ejected workpiece against a transmitting device to press the withdrawal cord against the withdrawal end of the compressed workpiece.

4,453,297

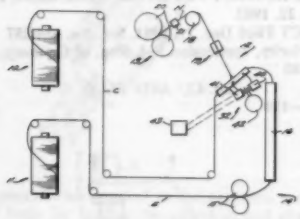
NOVELTY YARN PRODUCTION

Joe F. London, Jr., Greensboro, and Charles D. Pugh, Burlington, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 71,027, Aug. 29, 1979, Pat. No. 4,311,000. This application Jul. 29, 1981, Ser. No. 288,215

Int. Cl.³ D02G *1/16, 3/34, 3/36*

U.S. Cl. 28—163 **10 Claims**



1. A method of producing novelty yarn having pronounced variations in linear density disposed at spaced points therealong, utilizing a novelty-yarn jet; said method comprising the steps of

(a) over-feeding an effect yarn to the jet;

(b) continuously feeding a core yarn to the jet, the core yarn being maintained substantially taut;

(c) continuously taking up a combined core and effect novelty yarn from the jet; and periodically

(d) forming a loop in the effect yarn extending substantially coincident with a portion of the core yarn; and then

(e) imparting a spiraling and/or rotating action to the loop of the effect yarn to wind the effect yarn around the core yarn by intermittently practicing step (a).

8. A method of making a novelty fabric utilizing a novelty-yarn jet having a distinct first, second, and third yarn ports and distinct first and second fluid ports, and an interlacing jet; said method comprising the steps of

continuously feeding a core yarn to the first yarn port, the core yarn being maintained substantially taut;

over-feeding an effect yarn to the second yarn port;

introducing fluid under pressure to the first fluid introduction port to form a loop in the effect yarn;

introducing fluid under pressure into the second fluid introduction port to impart a spiraling and/or rotating action to the loop of effect yarn to wind the effect yarn around the core yarn;

continuously taking up a combined core and effect novelty yarn from the third yarn port onto a take-up package;

adding coherence to the yarn between the effect zones by passing the combined core and effect novelty yarn through the interlacing jet between the take-up package and the third yarn port;

severing the yarn once a complete take-up package is formed;

backwinding the yarn from the complete take-up package; and

weaving the background yarn from the take-up package into a novelty fabric.

4,453,298

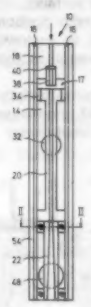
CONSTRUCTION OF THREAD TEXTURIZING NOZZLES

Werner Nabulon, Rudlingen, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 136,088, Mar. 31, 1980, abandoned. This application Apr. 22, 1981, Ser. No. 256,406

Int. Cl.³ D02G *1/12, 1/16*

U.S. Cl. 28—255 **37 Claims**



1. A thread texturizing nozzle for texturizing a thread travelling in a generally straight path, said nozzle comprising,

means for bringing together a thread to be texturized and treatment fluid at a junction location on said path, said means including a thread infeed passage opening onto said junction location and a single fluid infeed passage extending along an axis inclined at a small angle to said thread infeed passage and debouching onto said junction location;

a texturizing chamber defining a section of said path downstream from said junction location relative to the direction of movement of the thread through the nozzle;

a perforated wall surrounding said chamber to permit fluid to pass out of said chamber in a direction transverse to said path; and

a guide passage defining a section of said path between said junction location and said texturizing chamber, said thread infeed passage being offset transversely relative to said guide passage whereby said infeed passage and said guide passage have no common plane of symmetry so that the treatment fluid from said infeed passage urges the thread towards one side of said guide passage.

4,453,299

CONTROLLED DEFLECTION ROLL

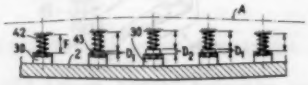
Rolander Hemmi, Richterswil, Switzerland, assignor to Escher Wyss Aktiengesellschaft, Zürich, Switzerland

Filed May 28, 1982, Ser. No. 383,103

Claims priority, application Switzerland, Jun. 17, 1981, 3980/81

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **8 Claims**



1. A controlled deflection roll comprising:

a stationary roll support;

a substantially tubular-shaped roll shell mounted to be rotatable about said stationary roll support;

support elements for supporting the roll shell at the roll

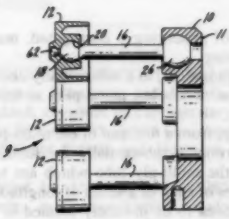
support with a substantially identical hydraulic force acting on the support elements;
means for generating said hydraulic force acting upon said support elements;
spring means provided for the support elements for exerting forces thereat;
said spring means being effective in the direction of the hydraulic force exerted upon the support elements and in addition thereto;
external pressing devices for pressing the controlled deflection roll against a counter roll in a pressing direction with a predetermined pressing force; and
the forces of the external pressing devices, the support elements and the spring means being selected such that for a predetermined contemplated pressing force there prevails an equilibrium condition and, while taking into account the therewith associated deflection of the roll support and the roll shell, the spring means produce a desired pressing force profile which is superimposed upon the hydraulic force exerted upon the support elements.

4,453,300

METHOD OF MANUFACTURING A SWASH PLATE ASSEMBLY

Edmund J. Klimek, Arlington Heights, and Richard W. Roberts, Lombard, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 22, 1982, Ser. No. 360,521
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—156.4 R **2 Claims**



1. The method of manufacturing a swash plate assembly, comprising the steps of:

(1) fabricating a plurality of piston subassemblies, each of which is made by (a) providing a connecting rod section with a first and second end with a substantially spherical surface formed on said first end; (b) positioning said spherical surface against a stepped locating pin end in a die casting mold to secure said spherical surface and connecting rod in said mold; (c) die casting a piston in said mold about said locating pin such that a portion of the piston captures said spherical surface in a complementary socket to form a ball/socket connection and where said piston further defines a stepped port formed about said locating pin, a top surface and a crown; (d) positioning a hardened ball in said stepped port against a step formed within said stepped port, to seal communication through said stepped port; (e) securing said hardened ball in said port against said step;

(2) providing a plurality of spherical balls or end members each defining a through-bore with a sidewall and positioned on a second stepped locating pin;

(3) mounting said second pin and spherical ball assemblies in a second die-casting mold, which second pin securely maintains said ball in position therein;

(4) die casting a swash plate having a front and rear face in said second mold such that said spherical balls are captured in a complementary socket to form ball/socket connections in said swash plate;

(5) removing said second locating pin from said throughbore thus providing a counterbore port at the rear face of said swash plate and opening said through-bore for communication between said front and rear faces of said swash plate;

(6) supporting said piston subassemblies and said swash plate in a holding fixture to align said connecting rods with said through-bores; and

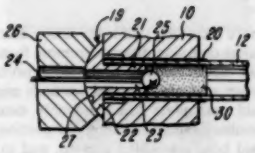
(7) axially moving said connecting rods into said through-bores to effect the final total length dimension from the rear face of said swash plate to the top surface of said pistons and joining said connecting rod second end to said sidewall of the through-bore.

4,453,301

SEALING MECHANICAL TUBE JOINTS

Charles B. Mort, and Dennis W. DeSalve, both of Findlay, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Nov. 17, 1980, Ser. No. 207,260
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 C **11 Claims**



1. A method of sealing mechanical tube joints in a tube and shell type heat exchanger, including the steps of:

a. providing a header plate with at least one tube accommodating through hole therein;

b. providing a tube made of a deformable metallic material and having an outside diameter to be received in the hole in the header plate;

c. inserting an end of said tube into the hole in said header plate so that it is received therein with an extremity at or adjacent to an exterior face of said header plate;

d. installing in an inserted tube end through said exterior face a metallic ferrule including a cylindrical body portion having an outside diameter approximately the same as the inside tube diameter and positioning said cylindrical body portion of said ferrule in said tube end in a longitudinal sense so that an outer end thereof substantially agrees with the extremity of said tube end;

e. effecting an expansion of said ferrule to deform the surrounding tube end into relatively close fitting contact with a header plate wall surface defining said through hole to form a mechanical tube joint and relatively to fix the tube end in the header plate; and

f. introducing into said joint over a portion of the length of the tube end within the header plate corresponding at least to the length of the cylindrical body portion of the ferrule a material acting in the presence of a deformed tube end in said through hole as a sealant.

4,453,302

APPARATUS FOR REUSING HIGH PRESSURE HOSE FITTINGS

Carl H. Owens, 1652 River Bluff Rd., Jacksonville, Fla. 32211

Filed Aug. 31, 1981, Ser. No. 298,168
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—237 **25 Claims**

1. An apparatus for applying a metal fitting to the end of a wire-reinforced elastomeric hose, said fitting comprising an elongated inner sleeve having opposite end portions with a flange coupling on one end and the other end portion extending inside said hose and an outer sleeve outside said hose, said sleeves compressing said hose therebetween to produce a high pressure hose and fitting combination, said apparatus compris-

ing an elongated frame having a longitudinal axis, a retainer plate having a generally central bore through which said hose extends and forming a seat for said outer sleeve by dimensioning said central bore with a diameter at least as large as the outside diameter of said inner sleeve and a counterbore forming said seat with a diameter substantially the same as the outside diameter of said outer sleeve, means attached to said frame for holding said retainer plate fixed with said outer sleeve resting in said counterbore; a push plate having a generally central bore in alignment with said retainer plate central bore and in alignment with said longitudinal axis, said push

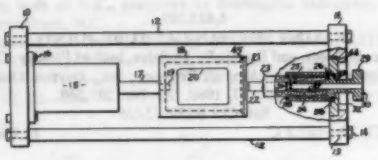


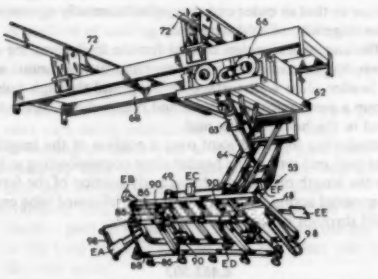
plate central bore receiving said inner sleeve therethrough and having said flange coupling disposed remote from said retainer plte, said inner sleeve having a shoulder portion generally medially between said opposite end portions engaged by said push plate, said push plate being movably mounted on said frame and movable against said shoulder portion of said inner sleeve with said hose assembled thereto, and to position said inner sleeve for insertion into said outer sleeve, and means to move said push plate and said inner sleeve into said outer sleeve until the two sleeves are mated with said hose end tightly compressed and sandwiched therebetween to produce a high pressure hose and fitting combination.

4,453,303

DEVICE AND PROCESS FOR AUTOMATIC SETTING OF A WINDOW ELEMENT, HEADLINING OR THE LIKE

Philippe Leddet, Villepreux, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jul. 27, 1982, Ser. No. 402,272
Claims priority, application France, Aug. 6, 1981, 81 15266
Int. Cl.³ B23Q *17/00*; B23D *21/00*; B65G *43/00*
U.S. Cl. 29—407 **10 Claims**



1. An apparatus for the automatic setting of an element onto an automobile body mounted on a conveyor line and including a frame for said element, said apparatus comprising:

a movable setting tool;

drive means for moving said tool in at least two orthogonal directions;

first sensor means on said tool for detecting the proximity of said body;

holder means on said tool for gripping said element;

hanging means on said tool for holding said body frame; and

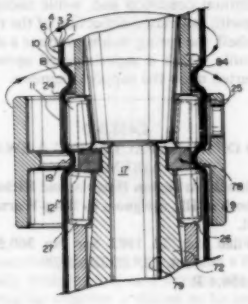
signal processing means for receiving signals from said first sensor means and controlling said drive means as a function of said signals.

4,453,304

METHOD OF PRODUCING A CORRUGATED, MULTI-PLY METAL BELLOWS

Cyril J. Astill, and Peter Janzen, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed May 24, 1982, Ser. No. 381,538
Claims priority, application Canada, Sep. 9, 1981, 358435
Int. Cl.³ B23P *17/00*; B21D *15/06*, *3/02*
U.S. Cl. 29—421 R **4 Claims**



1. A method of producing a corrugated, multi-ply, metal bellows, comprising:

(a) telescoping together, in a substantially coextensive manner, a number of tubular, metal plies to form a multi-ply tube, then

(b) successively, from a first end of the multi-ply tube, internally supporting in substantially the tubular form, only portions of the multi-ply tube which are to be adjacent opposite sides of each of a series of longitudinally spaced, annular grooves to be inwardly formed in the multi-ply tube, each of said portions of the multi-ply tube being supported by a series of tapered, rounded corner forming, rollers spaced by a roller cage around a tapered, annular supporting surface on a supporting shaft extending through, and supported at each end of, the multi-ply tube, the tapered rollers being moved radially outwardly into lengthwise, supporting engagement with, and withdrawn from, the multi-ply tube by relative movement, along the axis of the tube, between the tapered rollers and their supporting surfaces, while

(c) successively, inwardly rolling, from the first end of the multi-ply tube, each of the series of longitudinally spaced, annular grooves with rounded corners, in the multi-ply tube, while only the said portions of the multi-ply tube adjacent opposite sides of that annular groove are supported in the said substantially tubular form to remain substantially undeformed, and while the multi-ply tube is allowed to decrease in length to accommodate the formation of the annular grooves, the series of longitudinally spaced, annular grooves providing,

(i) annular grooves adjacent outer extremities of bellows cuffs forming portions of the multi-ply tube, and

(ii) annular grooves where root portions of corrugations are to be located at positions between the bellows cuffs forming portions, then

(d) separating the multi-ply tube from the supporting shaft and radially displaceable rollers and assembling spaced, corrugation root constraining and crest forming dies externally in and circumferentially around each of the annular grooves at which root portions of the corrugations are to be located, the dies being spaced from each other and

having substantially planar sides extending outwardly from the multi-ply tube and tangentially from inner, rounded root constraining ends to outer, rounded crest end portions, then

(e) assembling end crest forming dies externally in and circumferentially around each of the annular grooves adjacent the outer extremities of the bellows cuffs forming portions of the multi-ply tube, the end crest forming dies being spaced from the corrugation root constraining and crest forming dies and having substantially planar sides extending outwardly from the multi-ply tube and tangentially from rounded corner portions leading from inner extremities of the tube portions which are to form the bellows cuffs, to outer, rounded crest forming end portions, then

(f) pressurizing the bore of the multi-ply tube with a fluid with the dies in position while pushing the ends of the multi-ply tube together to outwardly bulge the said substantially undeformed portions, adjacent annular grooves where root portions of corrugations are to be located, to follow the substantially planar sides of the dies and form annular folds with rounded crests, then

(g) removing all of the dies from the annular grooves, then

(h) placing spacing shims around the multi-ply tube and between the folds, and compressing the multi-ply tube longitudinally until all of the folds are brought into contact with and gently hold the spacing shims therebetween, and then

(i) releasing the thus formed multi-ply bellows from the longitudinally applied compression and removing the shims therefrom.

4,453,305

METHOD FOR PRODUCING A MISFET

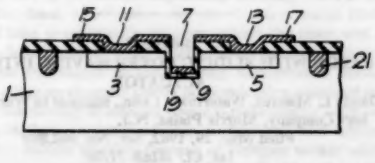
Timothy W. Janes, Worcester, and John C. White, Malvern, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 12, 1982, Ser. No. 397,343

Claims priority, application United Kingdom, Jul. 31, 1981, 8123507

Int. Cl.³ H01L *21/22, 21/285*

U.S. Cl. 29—571 **7 Claims**



1. A method for producing a MISFET (metal-insulator-semiconductor field-effect transistor), the method comprising the following steps:

(a) providing a substrate of single crystal semiconductor material; forming an excess doped region of semiconductor material of opposite conductivity type for

(b) providing the source and drain regions of the MISFET;

(c) forming, between and immediately adjacent the source and drain regions, a steep-walled groove extending depthwise at least to the interface between the excess doped material and the underlying substrate material;

(d) forming an insulating layer over the surface of the groove and over the excess doped material, windows being provided in the layer to expose the source and drain regions of the excess doped material;

(e) depositing conductive material so to cover simultaneously the exposed source and drain regions and the base of the groove, to exclusion of the steep side-walls of the groove; and

(f) annealing the whole to consolidate the contact junctions between the conductive material and the excess doped material.

4,453,306

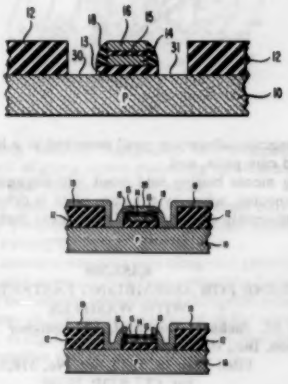
FABRICATION OF FETS

William T. Lynch, Summit, and Frederick Vratny, Berkeley Heights, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 27, 1983, Ser. No. 498,897

Int. Cl.³ H01L *21/285*

U.S. Cl. 29—571 **10 Claims**



1. A method of fabricating a field effect transistor including a source and drain region formed in the surface of a semiconductor substrate with a channel region therebetween, the method comprising the steps of:

forming over the channel region a multi-level electrode structure including successive layers of a gate electrode metal, a first insulator, and a silicide forming metal;

forming a second insulator along the edges of the electrode structure;

depositing a layer of polycrystalline silicon over essentially the entire transistor area;

reacting the silicide forming metal with the polycrystalline silicon so as to form a metal silicide over the electrode structure; and

selectively etching the metal silicide without affecting the first or second insulator or the remaining polycrystalline silicon layer.

4,453,307

TERMINATING TOOL

Daniel T. Casey, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,103

The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.

Int. Cl.³ H01R *43/04*

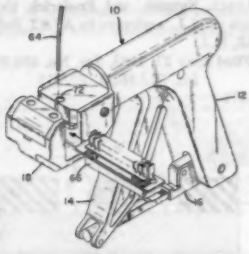
U.S. Cl. 29—751 **5 Claims**

1. A hand tool for successively connecting wires to respective electrical terminals arranged in a row extending along at least one side of a housing of an electrical connector, the tool comprising a wire insertion head, defining a connector channel, a wire insertion ram, means for driving the ram towards and away from the channel transversely of the length thereof, and means connected to the ram for advancing the connector step by step through the channel to bring each successive

terminal into alignment with the ram to allow the ram to drive a wire into the terminal, wherein the connector advancing means comprises:

a cam plate having a cam slot extending transversely of the path of movement of the ram,

a camming pin fixed with respect to the ram and sliding in said cam slot,



a connector advancing pawl mounted in a leading edge of said cam plate, and

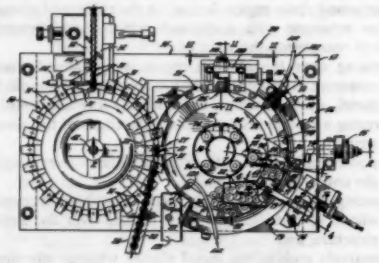
spring means biasing said pawl into engagement with the connector, whereby the cam plate is driven by the ram transversely of the path of movement thereof.

4,453,308

MACHINE FOR ASSEMBLING FASTENER BLANKS WITH WASHERS

Warren M. Jackson, Rockford, Ill., assignor to Warren M. Jackson, Inc., Rockford, Ill.

Filed May 18, 1982, Ser. No. 379,332
Int. Cl.³ B23P *19/08*
U.S. Cl. 29—785 **5 Claims**



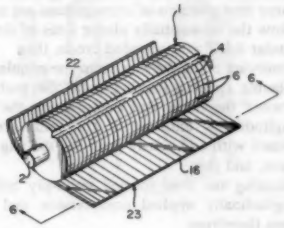
1. A machine for assembling male fastener blanks with washers, said machine comprising a support, a reservoir on said support for containing a supply of washers, a disc mounted rotatably on said support and having a plurality of pockets spaced angularly around its periphery, said disc defining the bottom of said reservoir, said reservoir having a substantially arcuate side wall located adjacent the outer periphery of said disc, means for rotating said disc to cause said pockets to move beneath said supply and pick up washers therefrom, power-operated delivery means selectively operable to cascade washers into said reservoir and on top of said disc to replenish said supply, and mechanism for telescoping male fastener blanks into the washers in said pockets, the improvement in said machine comprising, a substantially arcuate shoe removably secured to an inner side of said arcuate wall of said reservoir, a lower end portion of said shoe having a cam surface which is inclined downwardly and outwardly relative to, and is positioned in overhanging relationship with an outer peripheral portion of said disc and which engages a pile of washers positioned over said pockets in said supply to both shave off washers from an upper portion of said pile and turn such washers to positions disposed generally in the plane of said disc to prevent bunching of said washers and to promote entry of said washers into said pockets, means for detecting the approximate quantity of washers in said supply in said reservoir, and means responsive to said detecting means for activating said delivery means when the quantity of washers in said supply is low and for inactivating said delivery means when the quantity of washers in said supply is high.

4,453,309

MANUFACTURE OF DENSE, FLAT CONDUCTOR CONNECTORS

Albert Shirk, Palmyra, Pa., assignor to AMP Incorporated

Filed Nov. 20, 1981, Ser. No. 323,218
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—884 **6 Claims**



1. A method for fabricating a sheet of isolated metal conductors, comprising the steps of:

winding a conductive round wire in a helix having spaced apart coils over a grooved cylindrical drum,

wrapping over the coils a sheet of flexible polymeric material having a layer of adhesive between and adhering to the coils and the sheet,

applying pressure to the sheet,

severing the sheet and the coils,

stripping from the drum a composite of the sheet and the severed coils, and

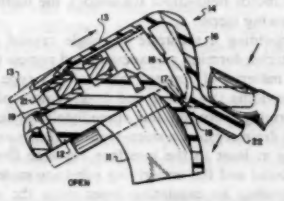
flattening the coils and the sheet to provide an array of parallel, closely spaced conductors.

4,453,310

RAZOR WITH SLIDING COVER HAVING INTEGRAL ACTUATOR

Claude L. Miserez, Watertown, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 29, 1982, Ser. No. 362,809
Int. Cl.³ B26B *21/06*
U.S. Cl. 30—47 **5 Claims**



1. In a disposable razor including a blade package and a handle of the type having a permanently connected sliding blade cover operable to protect and expose the blade package selectively, the improvement comprising:

a cover actuator molded integrally with the cover defining

with the cover a single piece-part, an element of said actuator being normally in contact with said handle while said blade package is protected by said cover, said handle providing a fulcrum for said element, said actuator and said element being operable to rotate about said fulcrum and move or walk along said handle to develop sufficient mechanical advantage to move the cover to expose the blade package for wet shaving, said actuator being flexible relative to said cover and having sufficient elastic memory to be operable to move out of contact with said fulcrum after said blade package is exposed for shaving.

4,453,311

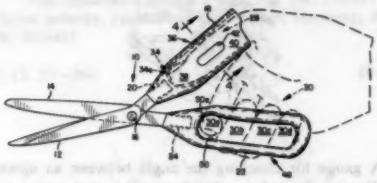
SCISSORS WITH THUMB RETAINER

Alan R. Twigger, 1825 SE. 46th Ave., Portland, Oreg. 97215

Filed Oct. 22, 1982, Ser. No. 436,014

Int. Cl.³ B26B *13/20*

U.S. Cl. 30—254 **5 Claims**



1. In scissors, including a finger-actuated blade, a thumb-actuated blade, and pivot means pivotally interconnecting the two for relative swinging movement in a swing plane, each blade having a shank joined thereto with the blade and its associated shank extending outwardly to opposite sides of said pivot means,

means for receiving the fingers joined to the shank which joins with the finger-actuated blade, and

a thumb retainer for receiving the thumb integrally joined to the shank which joins with the thumb-actuated blade, the thumb retainer including a cup portion with an internal cup surface facing away from said pivot means and said internal cup surface having a base extending transversely of the shank which joins with the thumb-actuated blade, said base providing an abutment which the outer end of the distal phalanx of the human thumb seats upon thus to locate the thumb in the retainer, said retainer further including an elongate sleeve portion joining with said cup portion having an internal sleeve surface joining with said cup surface, said internal cup surface and said internal sleeve surface together forming an elongate socket which receives completely and extends on all sides about the distal phalanx of the human thumb and which has sufficient length to extend from said distal phalanx on all sides about a major portion of the length of the human thumb phalanx which joins with the distal phalanx, said socket thus being adapted to embrace the two thumb phalanges whereby such phalanges are restrained from substantial articulation with the thumb seated in the retainer, the axis of said socket lying in said swing plane.

4,453,312

SAW ALIGNING MECHANISM FOR POWER HAND SAWS

Jim Z. Nishioka, 1268 Hemlock NW., Salem, Oreg. 97304

Filed Jul. 27, 1982, Ser. No. 402,238

Int. Cl.³ B27B *9/04*

U.S. Cl. 30—372 **3 Claims**

1. In combination,

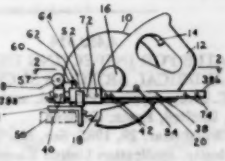
a saw comprising a motor, a handle, a blade, a base plate and a trigger switch, and

a mechanism for aligning the saw with a work piece to be cut,

said mechanism comprising

elongated guide means for guiding the saw during its cutting movements, said elongated guide means extending longitudinally in substantially same direction as a cutting motion of the saw, said elongated guide means comprising a forwardly portion and a rearwardly portion,

aligning means for butting against a work piece, said aligning



means being slidably engaged to said elongated guide means, said aligning means extending substantially transversely to said elongated guide means,

said aligning means being slidably positioned only on said forwardly portion of said elongated guide means during an initial cutting motion of the saw, and

connecting means connecting said elongated guide means to the saw, said connecting means restricting forward and rearward movements between said elongated guide means and the saw so that during operation of the combination both said elongated guide means and the saw move forwardly together and in unison.

4,453,313

METHOD AND APPARATUS FOR PRECISION TURNING

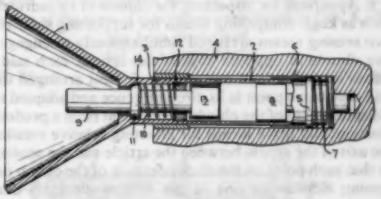
Jürgen Rinn, Launsbach, Fed. Rep. of Germany, assignor to Heyligenstaedt & Co. Werkzeugmaschinenfabrik GmbH, Giessen, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,424

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019680

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—178 D **3 Claims**



1. Apparatus for precision turning horizontally clamped workpieces which are inclined to sag comprising:

(A) a numerically controlled lathe having a cross-slide;

(B) a sleeve mounted axially displaceably for limited movement in a bore in said cross-slide and extending in the tool feed direction of the lathe, said sleeve being normally biased outwardly;

(C) said sleeve having a pair of outwardly extending diverging arms at the proximal end thereof;

(D) a first measurement pickup disposed within the sleeve near the distal end thereof for determining the displacement of the sleeve;

(E) a plunger axially displaceably disposed for limited move-

ment in said sleeve at the proximal end thereof and extending outwardly between said arms, said plunger being normally biased outwardly; and

(F) a second measurement pickup disposed in the sleeve near the proximal end thereof for determining the displacement of the plunger;

(G) whereby when said arms are placed over a workpiece, said plunger is displaced in relation to said sleeve until said arms abut the workpiece, thereby measuring the workpiece diameter through said second pickup, and said sleeve is then displaced in relation to said cross-slide, thereby measuring the slack of the workpiece through said first pickup.

4,453,314

APPARATUS FOR INSPECTING THE CHIMBS OF CYLINDRICAL ARTICLES SUCH AS KEGS

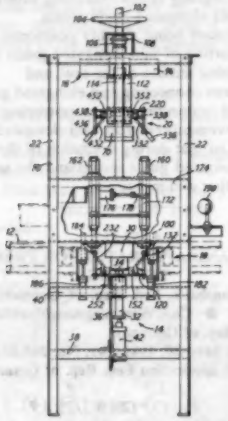
Kenneth F.C. Avey, Epping, England, assignor to The British Mathews, Limited, Essex, England

Filed Mar. 29, 1982, Ser. No. 363,277

Claims priority, application United Kingdom, Mar. 10, 1982, 8206970

Int. Cl.³ G01B 7/28; B07C 5/08

U.S. Cl. 33—178 E **6 Claims**



1. Apparatus for inspecting the chimbs of cylindrical articles such as kegs, comprising means for supporting such an article, two sensing means arranged simultaneously to engage respective chimbs at opposite ends of the article, each said sensing means having at least one sensing element arranged to engage said chimb at a point in its circumference and adapted to detect a displacement of the chimb at that point from a predetermined position, and drive means for effecting relative rotation about the axis of the article between the article and the sensing means so that each point on the circumference of the chimb passes the sensing element or one of the sensing elements during the rotation.

3. Apparatus for inspecting the chimbs of cylindrical articles such as kegs, comprising means for supporting such an article, sensing means having at least one sensing element arranged to engage a chimb of the article at a point in its circumference and adapted to detect a displacement of the chimb at that point from a predetermined position, and drive means for effecting relative rotation about the axis of the article between the article and the sensing means so that each point on the circumference of the chimb passes the sensing element or one of the sensing elements during the rotation, in which the means for supporting the article comprises two rotatable clamp members adapted to engage opposite end walls of the article, and means for moving the clamp members towards one another to clamp the article between them and away from one another to release the article, and in which the drive means comprises means for rotating at least one of the clamp members thereby to rotate an article clamped between them.

4,453,315

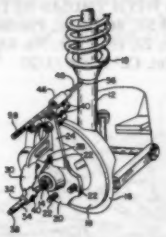
GAUGE FOR CHECKING ANGULAR DISPOSITION OF VEHICULAR SPRING STRUTS

Charles A. Mosiman, and William A. Deming, both of P.O. Box 1703, Beaverton, Oreg. 97075

Filed Mar. 7, 1983, Ser. No. 473,060

Int. Cl.³ G01B 3/38

U.S. Cl. 33—181 AT **7 Claims**



1. A gauge for checking the angle between an upwardly extending portion of a vehicular spring strut and a wheel spindle supported on the strut having a brake hub plate extending perpendicular to the spindle, the brake hub plate having wheel support studs thereon, said gauge comprising

(a) an upright flat body member arranged to lie flatwise against a brake hub plate for positioning it precisely parallel with the brake hub plate,

a depending portion on said body member,

positioning means on said depending portion arranged for alignment with the wheel spindle,

an upper extension on said body member,

and a gauge member on said extension projecting from said flat body member to determine the angular disposition of the upwardly extending portion of a spring strut relative to said flat body member.

4,453,316

MECHANISM FOR MEASURING DISTANCES ESPECIALLY THREAD DIAMETERS

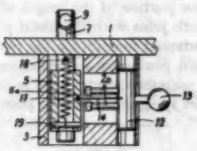
Secondo Marveggio, Lausanne, Switzerland, assignor to Trimos S.A., Renens, Switzerland

Filed Dec. 28, 1982, Ser. No. 454,001

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1982, 3200695

Int. Cl.³ G01B 3/48

U.S. Cl. 33—199 R **5 Claims**



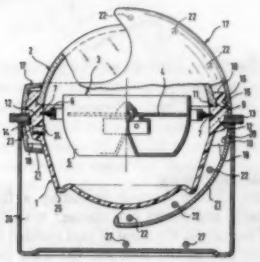
1. Mechanism for measuring distances particularly thread diameters, comprising a carrier (1) for receiving the object to be measured, two measuring support members (3,4) attached to said carrier, measuring pins (7,8) mounted in each of said measuring support members, said pins including measuring inserts

(9), at least one of said measuring support members movably mounted for measurement purposes opposite said carrier in a direction corresponding to the measurement direction, characterized in that said measuring pins (7,8) positioned in said measuring support members (3,4) are movable perpendicularly to said measurement direction, said measuring support members (3,4) including adjusting members (12,13) mounted therein to guide said measuring pins (7,8) into an approximate measurement position, spring members (14) connecting said adjusting members (12,13) with said measuring pins (7,8) so that, during a measurement operation, they permit a centering leeway of said measurement inserts (9) into the correct measuring position against the spring force of the spring members (14).

4,453,317
MAGNETIC COMPASS

Armin Rahn, Hamburg, Fed. Rep. of Germany, assignor to C. Plath KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 161,417, Jun. 20, 1980, abandoned. This application May 17, 1982, Ser. No. 378,631
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925411
Int. Cl.³ G01C *17/08*
U.S. Cl. 33—364 **10 Claims**



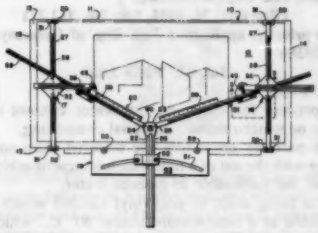
1. A magnetic compass comprising:
a compass bowl of flexible material having a rim whose thickness exceeds that of the remainder of the bowl, said rim being provided with an annular, inwardly facing groove;
a transparent rigid cover having an annular, outwardly facing flange;
said groove and said flange being arranged so that said flange is resiliently received in said groove to form a tight sealing relationship between said bowl and said cover;
a compass rose assembly within the sealed region enclosed by the compass bowl and the transparent cover; and
said rim additionally including at least one outwardly facing annular groove adapted to resiliently recieve a ring shaped supporting element under snapping action.

4,453,318
APPARATUS FOR PRODUCING PERSPECTIVE DRAWINGS

Jess W. Hayes, 9208 Farmington Dr., Richmond, Va. 23229

Filed Jan. 21, 1983, Ser. No. 432,276
Int. Cl.³ B43L *13/14*
U.S. Cl. 33—432 **6 Claims**

1. Apparatus for use in conjunction with a rectangular drafting table for producing perspective drawings within a working area on said table comprising:
(a) left side and right side holding means, each comprised of (1) an elongated first track adapted to be disposed on said drafting table perpendicularly between the upper and lower edges thereof and adapted to attach to said table adjacent said upper and lower edges, (2) a holding plate of substantially flat configuration disposed above said first track, (3) means for slideably engaging said holding plate with said first track, (4) an elongated second track positioned above said holding plate and perpendicular to said first track, said second track having inner and outer extremities, (5) means for slideably engaging said holding plate with said second track, and (6) pivoted support means pendantly attached to said second track adjacent the inner extremity thereof,
(b) a bottom adjustable holding means comprised of (1) an elongated panel adapted for attachment to the lower edge of the drafting table and having at least one arcuate slot symmetrically disposed about the perpendicular bisector of said panel and (2) a guide carriage movably associated with said arcuate slot, and

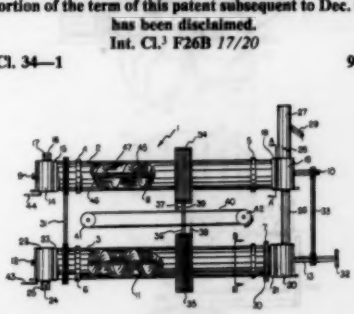


(c) drawing guides slideably held by said pivoted support means and said guide carriage, said drawing guides each having an outer extremity, and an inner extremity adapted to be positioned within said working area,
(d) the inner extremities of the drawing guides held by said pivoted support means being pivotably interconnected at a juncture, the inner extremity of the drawing guide held by said guide carriage also interconnected at said juncture,
(e) whereby manual movement of said juncture causes simultaneous pivotal movement of said drawing guides about three vanishing points in a manner to enable straight lines to be drawn for a perspective drawing.

4,453,319
AQUEOUS DRILL CUTTING TREATMENT APPARATUS AND METHOD

James B. N. Morris, P.O. Box 766, Harvey, La. 70059

Continuation-in-part of Ser. No. 125,531, Feb. 28, 1980, Pat. No. 4,304,609. This application Aug. 28, 1981, Ser. No. 297,212
The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.
Int. Cl.³ F26B *17/20*
U.S. Cl. 34—1 **9 Claims**



1. Method for removing water from oil and/or gas well drill cuttings to reduce the volume and/or weight of said drill cuttings, said method comprising introducing drill cuttings containing water into a rotatable, cylindrical, substantially horizontal retort vessel at an upstream end of said vessel, transporting said drill cuttings through said vessel by a rotat-

able, auger-type conveyor which is rotated in a direction opposite the rotation of said vessel, heating the drill cuttings during passage through said vessel to a temperature of 350° F. to 600° F. to gasify said water, discharging drill cuttings substantially free of water from said vessel, and discharging water vapor from said vessel.

4,453,320

PROCESS FOR CHANGING THE WATER CONTENT OF WATER-ABSORBING OR WATER-RELEASING MATERIAL

Wolfgang Zimmermann; Albrecht Harréus, both of Kelkheim, and Richard Gutte, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,271

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039386

Int. Cl.³ F26B *5/00*

U.S. Cl. 34—95 **10 Claims**

1. A process for changing the water content of water-absorbing or water-releasing material comprising,

at least partially separating the material from an adjacent space with the aid of a film which is impermeable to liquid water, but permeable to gaseous water,

said film being made of polyvinyl alcohol which is water-insoluble at a temperature below 80° C., which has an ester number of between 0 and 200 mg of KOH/g and the 4 percent strength of weight aqueous solution of which exhibits a viscosity of 4 to 100 mPa.s at a temperature of 20° C., the film being mechanically or chemically after-treated, as appropriate, and

placing said film between said material and an adjacent space to allow gaseous water to pass therethrough while preventing the passage of liquid water,

said water absorbing or water releasing material being a solid, a liquid or a gas.

4,453,321

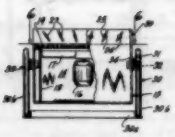
EXTRUSION COOLING APPARATUS

Howard L. McDonald, Grand Rapids, Mich., and Richard P. Petri, Phillips, Wis., assignors to Industrial Air Products, Inc., Phillips, Wis.

Filed Dec. 7, 1981, Ser. No. 328,404

Int. Cl.³ F26B *15/12*

U.S. Cl. 34—182 **10 Claims**



1. An extrusion cooling apparatus adapted to form a part of a continuous extrusion apparatus for producing an elongated hot extruded member, comprising an elongated support adapted to be located within a conveying means for the hot extruded member, an axial flow fan unit mounted to said support and having a circular output duct for developing a circular pattern of air moving upwardly from the fan unit, said output duct having a diameter substantially less than the length of said support, a substantially rectangular nozzle means and substantially the size of said duct secured to said duct in overlying relation to said fan unit and having a length substantially less than the length of said support to develop a rectangular air curtain from said circular pattern of air, said rectangular air curtain moving upwardly over a small length of the hot extruded member on said support, and a plurality of parallel louver means adjustably mounted within said nozzle means for controlling the size and direction of said rectangular air curtain.

4,453,322

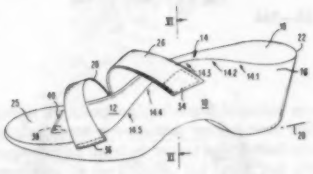
SANDAL HAVING SIDE WALL FOR PREVENTING PRONATION

Marion Marsh, New York, N.Y., assignor to Scholl, Inc., Memphis, Tenn.

Filed Feb. 4, 1982, Ser. No. 345,922

Int. Cl.³ H43B *3/12, 7/22*

U.S. Cl. 36—11.5 **10 Claims**



1. A sandal comprising:

a one-piece molded bottom including a footbed portion which faces and comes into contact with the foot, a front footbed portion at the front of said molded bottom located under the ball of the foot and the toes, and an elevated heel portion at the back of said molded bottom;

a substantially vertical, rigid side wall which extends up from and forms an integral part of said molded bottom, a top edge of said vertical side wall being smoothly curved and extending upward along the arch side of said molded bottom for a longitudinal length extending from a point adjacent said heel portion to said front footbed portion, said vertical side wall being of sufficient height above the foot bottom surface to provide stability for the ankle joint by preventing it from rolling inward toward the walking surface; and

support strap means positioned to extend from the top of said vertical side wall to the opposite side of said molded bottom at an outside foot portion thereof to properly position and maintain the foot in contact with both said vertical side wall and the footbed portion of said molded bottom during walking and assure a stabilizing fit.

4,453,323

METHOD AND SYSTEM FOR RECOVERING ENERGY FROM HOT PRESSURIZED WASTE

Nicholas Nassir, 616 N. Hidalgo Ave., Alhambra, Calif. 91801

Division of Ser. No. 50,103, Jun. 19, 1979, Pat. No. 4,335,738. This application Oct. 26, 1981, Ser. No. 314,676

Int. Cl.³ F02C *3/10*

U.S. Cl. 60—39.182 **12 Claims**

1. A system for recovering energy from a continuous supply of particulate-laden hot pressurized flue gases emanating from such sources as blast furnaces, coal gasification and petroleum refining equipment comprising:

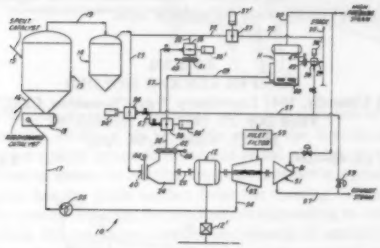
hot-gas-driven expander-power means;

flue gas disposal means;

first duct means connecting said source of flue gases to said gas disposal means via said expander-power means and

including second duct means for by-passing said flue gases around said expander-power means and thence to said gas disposal means; and

first and second high-temperature high-pressure purgable butterfly valve means in respective ones of said first and second duct means movable between open and closed positions and operable to route said hot pressurized gases selectively through one or the other of said first and second duct means at the operator's option thereby to maintain a substantially uninterrupted flow of gas from said source to said flue gas disposal means to permit servicing operations of said expander-power means safely without deactivating said source of flue gases; and



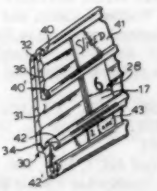
said first purgable butterfly valve means including shaft-supported disc means rotatable to a closed position against a pair of parallel semi-annular non-overlapping valve seats projecting inwardly from the interior of said first duct means, the periphery of said disc means being L-shaped with the non-flexible radial leg thereof spaced closely to the interior of said first duct means and located on the remote side of said disc means from a respective one of said valve seats when said disc means is closed thereby to form an outwardly facing annular chamber, and means for supplying purging fluid to said annular chamber at a pressure higher than the pressure of said source of flue gases when said purgable valve means is closed.

4,453,324

PRICING SIGN WITH CHANGEABLE NUMBERS

William Greenberger, White Plains, N.Y., assignor to The Hopp Press, Inc., New York, N.Y.

Filed Jan. 20, 1983, Ser. No. 459,686
Int. Cl.³ G09F *3/20*
U.S. Cl. 40—5 **6 Claims**



1. A display device having a self-storing changeable message, which comprises:

a mounting member having a forward surface provided with a channel defined by two flanges;

a cooperating display element comprising a foldable sheet having at least two segements bearing information for display and adapted to being inserted into said channel and engagement with said flanges so that information on a selected segment is displayed; and

at least one of said flanges having an extended portion that conceals a selected portion of the information on the display element.

4,453,325

ADVERTISING DISPLAY MEANS FOR PARKING METER AND THE LIKE

Warwick N. Ofsowitz, 3115 Old Post Dr., Pikesville, Md. 21208, and Robert S. Ginsburg, 6803 Westbrook Rd., Baltimore, Md. 21215

Filed Jun. 24, 1982, Ser. No. 391,722
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—333 **15 Claims**

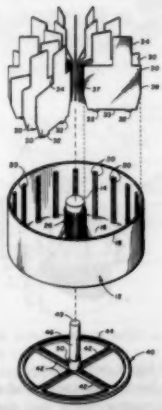
1. In combination with a pole-mounted type of parking meter having a removable housing disposed substantially at the top of the meter and adapted to cover at least a portion thereof, an attachment comprising a unitary member having a first portion substantially identical to the housing, whereby the unitary member may be readily substituted for the housing of the meter, said unitary member having a second portion integral with the first portion and extending vertically therefrom above the parking meter, said second portion having a face formed with a peripheral rim extending laterally therefrom, and an advertisement having a plan outline corresponding substantially to the face and secured thereto inwardly of the rim.

4,453,326

DOCUMENT HOLDING AND SEGREGATING DEVICE

Craig A. Hoffman, Dallas, and William D. Lawrence, Lewisville, both of Tex., assignors to Dynamic Resources Unlimited, Inc., Waco, Tex.

Filed Jul. 6, 1982, Ser. No. 395,134
Int. Cl.³ A47B *49/00*
U.S. Cl. 40—377 **3 Claims**



1. A document holding and segregating device particularly adapted for table top use to retain documents such as communication memos and the like addressed to plurality of different

entities whereby said documents may be identified by the entity to whom they are addressed and are segregated from documents addressed to the other entities, said device comprising:

a generally cylindrical body member adapted to rotate about a vertical axis, said body member including a central hub portion, a bottom wall secured to said hub portion, and an upstanding circumferential sidewall secured to said bottom wall and defining an open top;

a plurality of vertically upstanding spaced apart partitions extending radially outward from said hub portion toward said sidewall and dividing said body member into a plurality of document receiving compartments, said partitions being removably mountable on said body member and located on said body member by means on said body member defining a channel for receiving a side edge of each of said partitions, said partitions including spaced apart projections formed on a bottom edge thereof and insertable in cooperating slots formed in said bottom wall of said body member, said partition projections including integral ledges projecting from one side and engageable with said bottom wall for retaining said partition in said body member;

display means comprising vertically upstanding tabs integral with each of said plurality of spaced apart partitions for displaying optical indicia to identify respective ones of said compartments with an associated entity; and

support means for supporting said body member for rotation about a generally vertical axis passing through said hub for selectively positioning respective ones of said compartments for inspection, insertion or removal of documents, said support means comprising a base including a member having a centrally disposed post extending from one side of said member and adapted to be inserted in a bore in said hub portion for supporting said body member rotatably on said base by cooperating thrust bearing surfaces formed on said post and in said bore of said hub portion, said thrust bearing surfaces being formed on one end of said post and at one end of said bore in said hub portion, respectively, and including a cylindrical bearing surface formed on said post opposite said one end of said post and engageable with the bore wall of said hub portion.

4,453,327

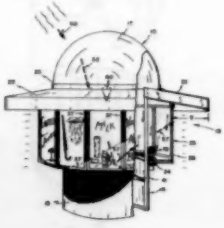
SOLAR DISPLAY KIOSK

Ronald A. W. Clarke, London, Canada, assignor to Animotion Inc., London, Canada

Filed Feb. 16, 1982, Ser. No. 349,166

Int. Cl.³ G09F *13/00*

U.S. Cl. 40—562 **9 Claims**



1. A solar display kiosk comprising;

(a) a closed conic having an upper and a lower end, spacely disposed by a circumscribing wall that defines a plenum;

(b) the upper end defining a first light transmissive region carrying thereon a pellucid ambient light capture area that is substantially equal to or greater than that of said upper end, whereby ambient light is adapted to pass through said first region into the plenum;

(c) the conic wall defining a second light transmissive region for conveying the ambient light within the plenum through the wall to the space immediately exterior to said plenum and the conic;

(d) means peripheral to said second light transmissive region for securing in close proximity thereto, indica;

(e) means within said plenum, for conveying ambient light entering therein, via the first said light transmissive region, through said second light transmissive region so as to illuminate said indica by means of back lighting; and,

(f) a light obscuring canopy projecting above and extending over said second light transmissive region so as to project shade onto and partially obscure said second region from direct illumination by ambient light.

4,453,328

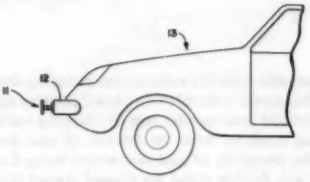
BUMPER STICKER HOLDER

Jack Connolly, 1647 Loganberry Way, Pleasanton, Calif. 94566

Filed Dec. 27, 1982, Ser. No. 453,782

Int. Cl.³ G09F *21/04, 7/12*

U.S. Cl. 40—591 **3 Claims**



1. A bumper sticker holder comprising

a mounting unit including a rigid plate with an adhesive upon a back surface thereof and at least one apertured lug projecting from a front face thereof, and

a holding unit having a rigid back plate and transparent front plate defining a compartment for receiving a bumper sticker through an openable end thereof and at least one apertured lug projecting from the rear of said back plate for engaging the lug on said mounting unit with connecting means extending through the apertures in said lugs for pivotally mounting said holding unit on said mounting unit.

4,453,329

FIREARMS WITH ROTARY MAGAZINES

Norman T. Brint, Waltham Abbey, and Jack W. Comley, Cheshunt, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB81/00123, 371 Date Mar. 15, 1982, 102(e) Date Mar. 15, 1982, PCT Pub. No. WO82/00347, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 1, 1981, Ser. No. 361,924

Claims priority, application United Kingdom, Jul. 14, 1980, 8022930

Int. Cl.³ F41C *13/00*

U.S. Cl. 42—15 **14 Claims**

1. A firearm having a rotary magazine characterised by

a magazine body defining around part of its circumference an opening through which a round of ammunition can be inserted or withdrawn, and around a remaining part of its circumference defining a circumferential restraint through which a round cannot be inserted or withdrawn;

a carrier rotatable within the body about a carrier axis and having radially extending portions adjacent pairs of which define positive locations in which a round of ammunition

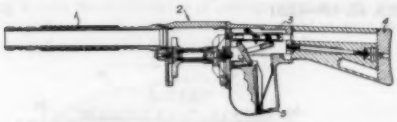
can be accommodated on insertion through the opening, rounds being slideable longitudinally in said positive locations;

resilient carrier biasing means for urging the carrier to rotate in a particular bias direction;

a guide member moveable across the opening;

said guide member having a guide surface facing against the bias direction so that a round inserted through the opening is guided into one of said positive locations and simultaneously rotates the carrier against its bias;

said guide member having a round-retaining surface facing



in the bias direction which can co-operate with one of the positive locations to positively retain the first-inserted round against circumferential and radial movement; and

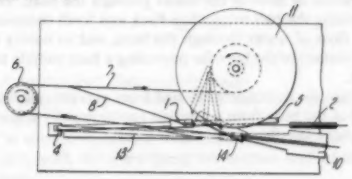
restraining means for holding the guide member in a position such that the guide surface faces the opening whenever the carrier occupies the position corresponding to one in which the magazine contains less rounds of ammunition than its maximum capacity, the guide member being moveable against the bias direction during movement of the carrier corresponding to insertion of the final round so that the first-inserted round may then pass through the position occupied at other times by the guide means.

4,453,330

APPARATUS FOR HAULING IN AND WINDING UP A FISHING LINE WITH ATTACHED SNELLS

Jorgen Jorgensen-Dahl, Solvangen 32, 2013 Skjetten, Norway

Filed May 20, 1982, Ser. No. 380,128
Int. Cl.³ A01K *91/00, 79/00*
U.S. Cl. 43—6.5 **3 Claims**



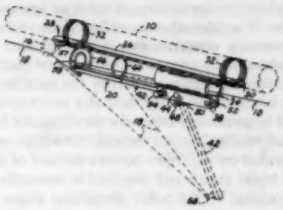
1. An assembly on an apparatus for hauling in and winding up a fishing line with attached snells and hooks, comprising a hook aligner, a hook guide and a driven drum with hook magazines and hook trapping means provided on one of the drum flanges, characterized in that the hook guide comprises a hook holder which is slidably disposed on a rail and which is spring biased opposite to the direction of the incoming line, one end of said rail being pivotally mounted and the other end being arranged for movement from a hook-receiver position to a hook-delivery position, the assembly also including a pulley arranged in the vicinity of the pivot point of the rail for guiding the line back, so that it may be coiled on the drum, the snell drawing the hook holder along with it in the direction of the incoming line and during this being held taut, further that the snell after having passed around the pulley permits the hook holder to be pulled back along the rail by the spring bias, said rail during the to-and-fro movement of the hook holder pivoting toward the periphery of the drum flange, where one of the hook trapping means provided on the margin of the drum flange guides the hook onto one of the hook magazines.

4,453,331

FISHHOOK SETTING TRIGGER

Clifford O. Whetstone, Sr., 1324 West 4, Ontario, Calif. 91762

Filed Mar. 18, 1982, Ser. No. 359,453
Int. Cl.³ A01K *91/06*



U.S. Cl. 43—15 **1 Claim**

1. A device for impulsively jerking a fishing line in response to movement of the fishing line caused by a fish taking the bait on a hook attached to the fishing line, comprising:

an elongated base bar longitudinally secured to a fishing rod;

a housing comprising a split sleeve having a slot supported by said base bar;

a lever pivotally connected at one end portion within said housing slot for pivoting movement of its other end portion relative to said housing toward and away from said base bar;

spring means in said housing normally biasing said lever away from said base bar; and,

trigger means including a pair of rings adjacent said lever other end portion when the lever is in cocked position through which the fishing line is entrained in a manner to move one ring of said pair of rings relative to the other for releasing the lever and jerking the fishing line,

said one ring of said pair of rings being pivotally connected with said base bar and the plane of said one ring disposed perpendicular to the longitudinal axis of said base bar and normally surrounding said other end portion of the lever when the latter is in cocked position,

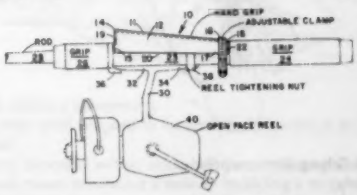
the other ring of said pair of rings being rigidly secured to said other end portion of said lever to project toward said base bar adjacent and parallel with the plane of said one ring when the lever is in cocked position.

4,453,332

HAND GRIP FOR FISHING ROD HANDLE

Donald R. Wightman, Greentree Village North, 12015 O'Connor Rd., Lot No. 83, San Antonio, Tex. 78233

Filed Mar. 25, 1982, Ser. No. 361,599
Int. Cl.³ A01K *87/00*
U.S. Cl. 43—23 **8 Claims**



5. A hand grip in combination with a fishing rod handle consisting essentially of:

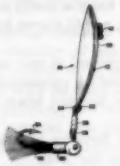
a body member adapted for mounting on a fishing rod handle and having an upper single inclined surface inclining downwardly from the front of the fishing rod handle to the back thereof, whereby the wrist of a user is maintained generally at a neutral rest position during the normal use of the fishing rod.

4,453,333
FISHING LURE

Robert W. Olson, 9022 E. 60th, Tulsa, Okla. 74145

Filed Apr. 6, 1981, Ser. No. 251,269
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.5 2 Claims

1. A fish lure for connection to a fishing line and comprising blade means of an elevational configuration including a larger portion smoothly conterminous with a smaller portion and having a substantially convex cross-sectional configuration in a single direction throughout whereby the peripheral configuration of the blade means is substantially an irregular egg-shape having said large portion thereof wider than the longitudinally opposed said smaller portion thereof, outwardly projecting eye means provided on the outer convex surface of the large portion of the blade means and disposed in inwardly spaced relation with respect to the outer peripheral edges of the blade means and along the longitudinal centerline thereof for connection with the fishing line, (and) fish hook means carried by the blade means, fishhook attachment means mounted along the longitudinal centerline of the blade at the peripheral edge

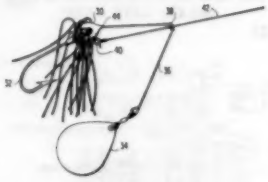


of the smaller portion, the spacing of the eye means cooperating with the fishing line to provide a kite-like action for the lure while moving through the water, the eye means comprising a plurality of loop members disposed in substantial alignment along the longitudinal center line of the blade means, and wherein the blade means is of a variable cross-sectional thickness, the cross-sectional thickness being less in the proximity of the fish hook means and increasing in the longitudinal direction away from the hook means and being thickest in the proximity of the eye means.

4,453,334
FISHING LURE

Paul Opperman, 5 N. Franklin, New Bremen, Ohio 45869, and Roger H. Liette, Rte. 2, Box 184, St. Marys, Ohio 45885

Filed Feb. 24, 1982, Ser. No. 352,016
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.13 8 Claims

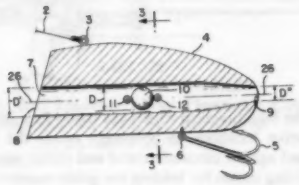


1. A fishing lure comprising:
a body;
a hook carried by said body;
a projection connected to said body at a first point and having a line-receiving aperture therein at a second point spaced from said first point;
an eyelet on said body and operable to receive a fishing line at a third point spaced from said first and second points so that upon attachment of a fishing line through said line-receiving aperture and to said eyelet, a three sided figure is formed wherein the eyelet and a portion of the body form one side, a portion of the projection and a portion of the body form a second side, and a portion of the fishing line extending through the line-receiving aperture and to the eyelet form a third side; and
a spinner connected to said projection, whereby variations in tension in the fishing line will cause said body to pivot about said line-receiving aperture.

4,453,335
AUDIBLE FISH LURE

Joseph M. Smith, 15303 70th Ave., East, Puyallup, Wash. 98373

Filed Apr. 7, 1982, Ser. No. 366,377
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.31 7 Claims

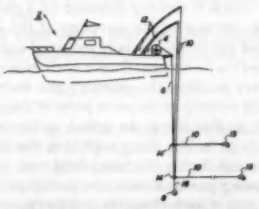


1. An audible fish lure comprising:
(a) A lure body, with an inlet end and an outlet end, having a bore through which water flows from inlet end to outlet end, as the said lure is pulled through the water;
(b) Means attached to the lure body for attaching a fishing line thereto;
(c) Means attached to the lure body for attaching a fish hook thereto;
(d) A solid ball of diameter slightly less than the diameter of said bore with respect to said bore diameter and yet of sufficient diameter so to permit water to flow only around said ball and to cause Bernoulli's principle to effect the ball in said bore to thereby cause steady oscillatory action of said ball;
(e) Means approximately midway of the length of said bore for continuously restraining the ball from moving in the direction of flow of the water through the bore, yet still allowing the ball to oscillate back and forth transverse of the flow of water through the bore, and to noisily strike the surface of the bore for providing a hum audible to fish; and,
(f) Means for restraining the ball from moving out the inlet end of the bore from a position approximately midway of the bore length.

4,453,336
FISH LINE RELEASE MECHANISM

Roger G. Lowden, 178 Huffer Rd., Hilton, N.Y. 14468

Filed Jun. 1, 1982, Ser. No. 384,013
Int. Cl.[3] A01K *91/00*
U.S. Cl. 43—43.12 2 Claims



1. A fishing line release mechanism for connection to a trolling cable, including:
a body of resilient material defining a cable aperture for a sliding fit of said body around said cable and a narrow slit

along the length of said aperture to permit said body to be resiliently pressed into said sliding fit on said cable,

a resilient clamping means to releasably clamp said body onto said trolling cable for stacking a plurality of said mechanisms at desired points on said trolling cable, said clamping means including a clamp screw for establishing and adjusting compression in said clamping means,

said body including a pair of opposed jaws defining between them a line aperture for the free passage therethrough of a fishing line, said jaws each including an inwardly extending tip, said tips being in engagement with each other so that said line aperture is normally closed,

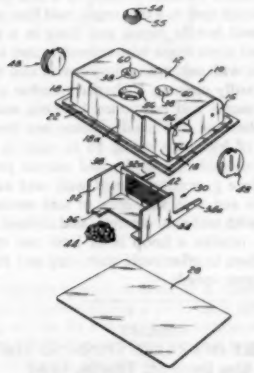
and means to urge said jaws against each other at their tips and to vary the compression of said tips against each other to thereby adjust the release tension required to open said jaws and release said fishing line.

4,453,337

RODENT FEED STATION

Charles G. D. Williams, Rolling Hills Estates, Calif., assignor to Environmentally Safe Products, Corp., Torrance, Calif.

Filed Aug. 12, 1982, Ser. No. 407,657
Int. Cl.³ A01M *25/00*
U.S. Cl. 43—131 **16 Claims**



1. A rodent feed station comprising:

a housing having an upper wall and four depending side walls;

a flat sheet cooperating with the housing to form an enclosure, with the sheet being the bottom wall of the enclosure;

a bait cup positioned within said housing cooperating with said housing to form a compartment for rodent bait, said cup including a pair of spaced opposing walls extending from said bottom wall to the upper wall of said housing, an adjacent first side wall of said housing including recess means for receiving and positioning one side edge of each of said cup walls, said cup walls further including portions which extend across said housing to fit within recess means in a second side wall of said housing spaced from said first side wall;

said housing having a third wall extending between the first and second housing side walls, with the third wall having a hole formed therein to permit a rodent to enter the housing, one of said cup walls being spaced inwardly from said housing third side wall facing said hole so that the bait compartment is not directly accessible through the hole; and

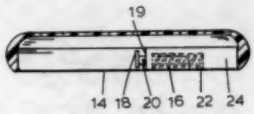
a window in a third side wall of the bait cup between said cup wall portions to permit access by the rodent to the bait in the compartment.

4,453,338

FINGER FLICKER SAUCER WITH SPRING POWERED TAB

James A. Lehman, 362 N. Seymour (Apt. 218), Fond du Lac, Wis. 54935

Continuation-in-part of Ser. No. 328,365, Dec. 7, 1981, abandoned. This application Apr. 26, 1982, Ser. No. 371,566
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.³ A63H *27/00*
U.S. Cl. 446—46 **8 Claims**



1. An improved hand held finger flickable flying saucer toy comprising: a central body portion;

a curvi-linear air foil configured depending lip positioned around the periphery of said central body portion; and

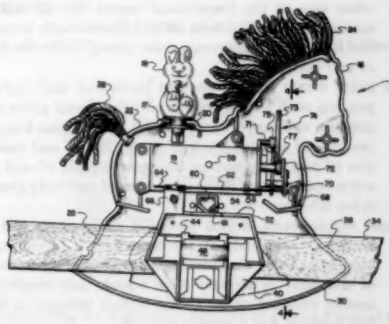
at least one launching tab extending toward the center of said central body portion and secured to the inner surface of said saucer by a spring whereby said flying saucer toy is launched by compressing the launching tab with the index finger and clamping the saucer to the hand with the thumb and then thereafter releasing the thumb which releases said saucer to the action of said spring to cause said saucer to withdraw from said index finger.

4,453,339

MUSICAL RAIL ROCKER

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 13, 1982, Ser. No. 417,317
Int. Cl.³ A63H *5/00, 13/18*
U.S. Cl. 446—227 **10 Claims**



1. A crib toy comprising:

an outer shell adapted to be removably mounted on a crib rail;

means mounted within said shell for producing a melody, said means producing a melody including a motor having an output shaft;

means mounted to said toy for fixing said shell to said crib rail;

drive means mounted within said shell for rocking the toy with respect to said crib rail;

means for connecting said drive means to said output shaft; and

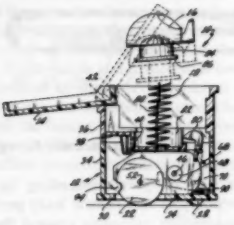
short rockers held within said shell for assisting rocking of said toy.

4,453,340

TOY HAVING MOVING MODES DEPENDENT UPON LOCATION OF MOVING MEMBER

Michihiro Kozuka, and Masayuki Tonokura, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Japan

Filed May 19, 1982, Ser. No. 379,773
Claims priority, application Japan, May 30, 1981, 56-79127
Int. Cl.³ A63H 17/26
U.S. Cl. 446—437 10 Claims



1. A toy which comprises: a body, said body divided into at least a main section and a supplemental section;

a motor means located in said main section of said body;

a set of drive wheels operatively associated with said motor means so as to be rotated by said motor means, said set of drive wheels located on said main section of said body and positioned such that at least a portion of said drive wheels extend below said main section of said body and contact a support surface, one of said drive wheels located on one side of the longitudinal center line of said main section of said body and the other of said drive wheels located on the other side of the longitudinal center line of said main section of said body, both of said drive wheels located on one side of the transverse center line of said main section of said body;

a guide means located on said section of said body in a position such that at least a portion of said guide means contacts said support surface, said guide means located on one side of said longitudinal center line of said main section of said body and on the opposite side of said transverse center line of the main section of said body from said drive wheels;

said supplemental section pivotally mounted on said main section of said body at a point which is located on the same side of said transverse center line of said main section of said body as are said drive wheels, said supplemental section pivoting on said main section between at least a first position and a second position;

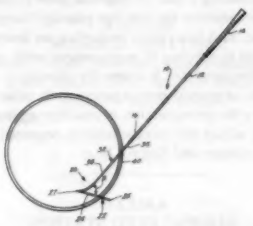
said drive wheels supporting at least a portion of the weight of said toy on a support surface and said guide means supporting the remaining portion of the weight of said toy on said support surface, the portion of the weight of said toy supported by said guide means being greater when said supplemental section of said body is in said first position than when said supplemental section of said body is in said second position such that as said drive wheels rotate said toy is propelled over said support surface and the direction of travel of said toy on said support surface when said supplemental section is in said first position is different than the direction of travel of said toy on said support surface when said supplemental section is in said second position.

4,453,341

HOOP CONTROL GUIDE

Edward Klukos, 10030 - 152nd St., West Olive, Mich. 49460

Filed Sep. 24, 1982, Ser. No. 422,573
Int. Cl.³ A63H 33/02
U.S. Cl. 446—450 14 Claims



1. A hoop guide and control comprising:

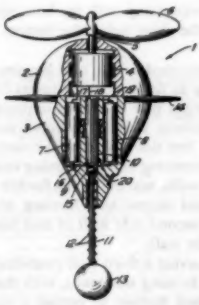
elongated handle means extending along an axis and including a control and guide member coupled thereto, wherein said control and guide means includes a first forwardly opening V-shaped member formed by a first pair of legs converging to an apex at a first angle, said first pair of legs coupled to said handle means and lying in a plane at a predetermined acute angle with respect to said axis of said handle means with said apex aligned with said axis, and a second forwardly opening V-shaped member coupled to said handle means and positioned between said first V-shaped member and said handle means and formed by a second pair of legs converging to an apex at a second angle less than said first angle, said second pair of legs lying in a plane generally aligned with said axis of said handle means and with said apex of said second pair of legs aligned with said axis, whereby said control and guide member can receive a hoop in at least one of said V-shaped members to effectively start, stop and control the hoop at different speeds.

4,453,342

BATTERY OPERATED SPINNING TOP

Raphael Sahar, 2 King David St., Tiberias, Israel

Filed Jun. 3, 1981, Ser. No. 269,971
Int. Cl.³ A63H 1/00
U.S. Cl. 446—37 2 Claims



1. A battery actuated spinning top comprising a pear shaped casing in the widest portion of which is provided a small electrical motor the shaft of which extends out of the casing in the axial direction of the latter, a propeller being keyed at the free end of the shaft, a lengthwise split tubular member of conductive material being positioned axially within the casing, the two

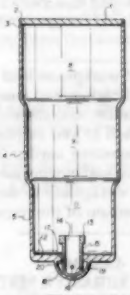
halves of the said split tubular member being each connected in a closable circuit with the poles of the motor via a source of current within the casing, a stem which is urged outwardly from the casing and is positioned co-linearly with the said split tubular member is being provided, the said stem having a metallic member at its inner end and a resilient sphere at its outer end, so that when the stem is urged inwardly of the casing, the said metallic member is made to contact the two halves of the split tubular member and close the circuit, so actuating the motor and setting the propeller into rotative movement.

4,453,343

IRRIGATION SYSTEMS

Roland S. Grimes, Sr., P.O. Box 1131, 29 Palms, Calif. 92277

Filed Apr. 8, 1983, Ser. No. 483,191
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—48.5 **19 Claims**



1. An irrigation system comprising in combination:
a receptacle means having a removable lid therefore, and
metering means on a lowermost portion of said receptacle allowing fluid contained within said receptacle to be metered outwardly therefrom,
said metering means being adjustable and including a plug member threadedly disposed in a bottom face of said receptacle including a central plug bore and a plurality of apertures at a lowermost stem of said plug member, whereby threads complementally formed on said bottom face of said receptacle can both orient said apertures associated with said plug member for controlling flow rate and axially translate said plug member.

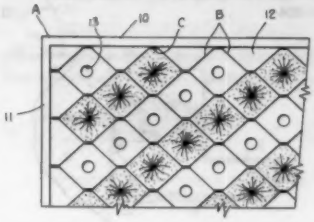
4,453,344

SEEDLING PROPAGATING CONTAINER AND METHOD

Aart Van Wingerden, Hwy. 191, Rte 1, Box 74A, Horse Shoe, N.C. 28742

Continuation of Ser. No. 279,626, Jul. 1, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,758
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—85 **10 Claims**

1. A seedling growing container comprising:
a plurality of removable partitions each partition integrally formed of stiff, bridging material;
each of said partitions being generally sinuous and defining a series of generally outwardly diverging walls connected on adjacent ends forming a plurality of spaced troughs;
said partitions being positioned to form a block with troughs of adjacent partitions in opposed relation and with adjacent partitions having contact points on either side of each said adjoining trough to form respective growing compartments with alternate empty compartments therebetween to provide for air pruning at said contact points, alternating compartments being suitable for growing a single seedling;
a tray having open bottom portions providing support means removably positioning said partitions; and
each of said partitions being of such length as to extend



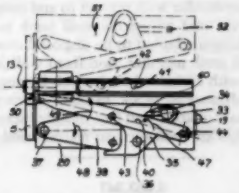
across said tray for support adjacent opposite ends thereof; there being seedling plugs in said growing compartments such that no two plugs are adjacent the same contact point and such that all plugs within each of said growing compartments are encompassed by a barrier and a contact point which communicates with air for air pruning at the contact point.

4,453,345

WINDOW AND DOOR MOUNTING

Julius Maus, Stuttgart, Fed. Rep. of Germany, assignor to Gretsch-Unitas GmbH Baubeschlagfabrik, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,176
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027835
Int. Cl.³ E05D *15/50, 15/22*
U.S. Cl. 49—193 **12 Claims**



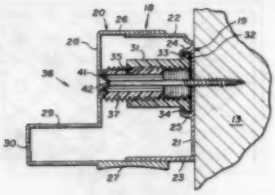
1. A mounting for a movable member in a fixed frame comprising:
a set-off arm pivotally and slidably mounted to the movable member at one end thereof and pivotally mounted to the frame at an opposite end thereof;
an auxiliary arm pivotally mounted at one end thereof to the movable member and at an opposite end thereof to said set-off member at a location intermediate the opposite ends of said set-off member;
the movable member being movable from a first position in the frame to a second position spaced from the frame, with said set-off arm having mirror image opposite inclined positions with respect to the plane of the movable member with the movable member in its first and second positions respectively, said set-off arm and auxiliary arm having Y-shaped mirror image configurations in said first and second positions of said movable member.

4,453,346

ADJUSTABLE WALL JAMB FOR SHOWER DOOR

David W. Powell, Union City, and James W. Hodges, Palmersville, both of Tenn., assignors to United States Gypsum Company, Chicago, Ill.

Filed May 24, 1982, Ser. No. 381,108
Int. Cl.[3] E06B 1/04; E05D 15/06
U.S. Cl. 49—404 10 Claims



1. An adjustable wall jamb assembly for a shower door, comprising a fixed wall jamb member adapted to be affixed to a wall, and an adjustable wall jamb member juxtaposed with respect to said fixed jamb member, an adjustable block assembly interposed between said fixed wall jamb member and said adjustable wall jamb member and comprising an adjustment block member adapted to be affixed at one end to said fixed wall jamb and having a threaded engagement means at the other end, and an adjustment screw having threaded engagement means complementary with that of said adjustment block, said adjustment screw having an axial aperture, the free end of said adjustment screw having means for being engaged by a tool for being rotated with respect to said adjustment block, said free end adapted to be in contact engagement with said adjustable wall jamb member thereby determining the spacing between said fixed and adjustable wall jamb members, said adjustable jamb member having an aperture therein at the area adapted to be in contact engagement with said adjustment screw, and a screw adapted to be disposed through the aperture in said adjustable jamb member, extending through the axial aperture of said adjustment screw, and being adapted to penetrate a wall of said fixed wall jamb member and to become affixed to the wall on which said fixed jamb member is adapted to be mounted, said fixed wall jamb member having a base web and flanges perpendicular with respect to and connected to the edges of said web, said adjustable wall jamb member being provided with flanges adapted to be disposed over the flanges of said fixed wall jamb member, said fixed wall jamb member being provided with a channel on its web having turned over lips, and said adjustment block member having a shoulder engaged within said channel and free to slide therein for adjustment until said lips are bent over to restrain said shoulder.

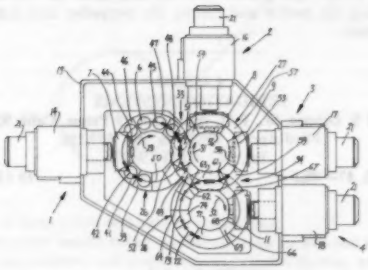
4,453,347

APPARATUS FOR MANIPULATING WORKPIECES HAVING PLANE PARALLEL SURFACES

Werner Redeker, Börnsen, and Uwe Uhlig, Buchholz, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 328,861
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047035
Int. Cl.[3] B23Q 7/14, 3/15; B24B 41/06
U.S. Cl. 51—108 R 11 Claims

1. Apparatus for supporting, locating and transferring workpieces having upper and lower surfaces for removal of material at a succession of stations, comprising work holder means including a first work carrier disposed at a first level and a second work carrier disposed at a higher second level, said carriers having surfaces facing and at least partially overlapping each other, said surface of said first carrier facing upwardly and said surface of said second carrier facing downwardly, each of said carriers being activatable to attract workpieces to its surface and deactivatable to release such workpieces so that a workpiece between the surfaces of the carriers can be transferred from one of said carriers to the other of said carriers by deactivating the one carrier while the other carrier is activated; a first grinding wheel disposed above the surface of said first carrier and arranged to treat the upper surfaces of workpieces resting on said first carrier; a second rotary grinding wheel disposed below said second carrier and arranged to



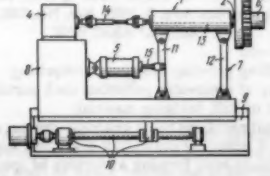
treat the lower surfaces of workpieces held by and adjacent to the surface of said second carrier; and means for moving said carriers relative to each other, said stations including at least one discrete station for each of said carriers and said stations being adjacent to the respective carriers and constituting a series of successive stations, said moving means being arranged to effect the transport of workpieces to successive stations of said series through the medium of the respective carriers.

4,453,348

APPARATUS FOR ABRASIVE MACHINING OF WORKPIECES

Konstantin S. Tolstopyatov, ulitsa Pervomaiskaya, 30, kv. 24, Elektrostal Moskovskoi oblasti; Anatoly A. Lukyanov, ulitsa Rogozhskaya, 100b, Noginsk Moskovskoi oblasti; Viktor I. Burmakin, ulitsa Stalevarov, 5, kv. 2, Elektrostal Moskovskoi oblasti; Igor S. Pryanishnikov, ulitsa Nikolaeva, 23, kv. 44, Elektrostal Moskovskoi oblasti; Gennady N. Maslov, ulitsa Pervomaiskaya, 34-19, kv. 25, Elektrostal Moskovskoi oblasti; Mikhail U. Zemtsov, ulitsa Delegatskaya, 9, kv. 110, Moscow; Nikolai G. Bobovnikov, ulitsa Sovetskaya, 1, kv. 43, Elektrostal Moskovskoi oblasti; Viktor A. Sorokin, prospekt Lenina, 38/7, kv. 5, Elektrostal Moskovskoi oblasti; Nikolai B. Marchenkov, ulitsa Yalagina, 22, kv. 37, Elektrostal Moskovskoi oblasti; Alexandr L. Pyatibrat, ulitsa Mayakovskogo, 13, kv. 16, Elektrostal Moskovskoi oblasti, and Ernst L. Tonaevsky, ulitsa Sovetskaya, 64, kv. 9, Noginsk Moskovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 184,420, Sep. 5, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,028
Int. Cl.[3] B24B 7/00
U.S. Cl. 51—109 R 4 Claims



1. Apparatus for abrading machining a workpiece comprising,

an articulated four-link linkage comprising a movable carriage having two pivoted parallel links each having an end

pivotally mounted on said carriage, an elongated tool head constituting a link of said four-link linkage, a driven spindle extending axially through said tool head for mounting an abrading tool thereon, means pivotally connecting the two parallel links in a common plane thereof pivotally connected to said tool head, said spindle being disposed in said plane rotational in said tool head,

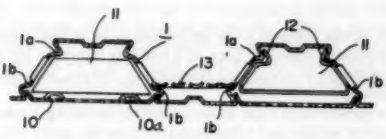
drive means for rotatably driving said spindle selectively in said elongated tool head comprising a driven telescoping cardan shaft in said plane connected to the spindle and extending axially thereof, actuating means pivotally mounted on said carriage and pivotally connected to one of said two parallel links for selectively actuating jointly the two parallel links of said four-link linkage to advance the tool head longitudinally toward and away from the workpiece and resiliently engage the abrading tool with the workpiece, said telescoping cardan shaft being mounted for telescopically extending as said tool head is advanced toward the workpiece and telescopically retracting as said tool head is moved away from said workpiece when said two parallel links are actuated, and means independent of said actuating means to selectively move the carriage to move said actuating means and two parallel links and the elongated tool head of the linkage jointly toward or away from the workpiece.

4,453,349

FLOOR AND ROOF DECK

Thomas G. Ryan, Bethel Park, Pa., assignor to Cyclops Corporation, Pittsburgh, Pa.

Filed Feb. 20, 1981, Ser. No. 236,188
Int. Cl.³ E04B *1/74*; E04C *2/32*
U.S. Cl. 52—28 **11 Claims**



1. A structural deck for supporting concrete floors in interlocking relationship, comprising an undulating symmetrical and reversible structure having substantially horizontal bottom walls and top walls having inwardly extending central ribbed portions of identical construction, said bottom and top walls being of identical but inverted construction interconnected by downwardly and outwardly tapered, substantially flat sidewalls, the top portions of said sidewalls having immediately adjacent inwardly extending dove-tailed flanges projecting directly below the side portions of said top walls to serve as interlocking elements and supports for articles that may be suspended inside the deck, the bottom portions of said sidewalls having immediately adjacent inwardly extending dovetailed flanges projecting directly above the side portions of said bottom wall so as to make the deck of inverted symmetrical construction throughout, and readily detachable closure means suspended by said last-mentioned flanges for forming closed cells with at least some of the undulations of said structure.

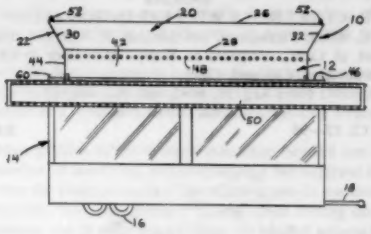
4,453,350

MARQUEE FOR CONCESSION STAND TRAILERS

John S. Schantz, and Raymond G. Schantz, both of Marine, Ill., assignors to Schantz & Sons, Inc., Marine, Ill.

Filed Jun. 4, 1982, Ser. No. 384,969
Int. Cl.³ E04B *1/346*
U.S. Cl. 52—64 **8 Claims**

1. A marquee for a vending trailer or the like, said trailer having a roof top supporting said marquee, said marquee comprising a pair of side walls hingedly connected to a support on said roof top and a pair of end walls hingedly connected to a support on said roof top, said side and end walls being moveable from an erected position where opposite ends of said walls are engageable in a first mating relation to a collapsed position



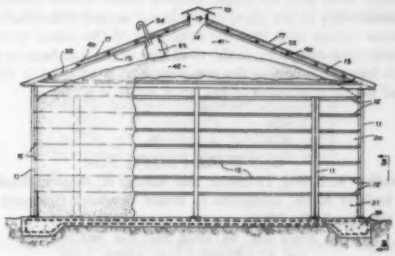
where said opposite ends are engageable in a second mating relation, said side and end walls in the erected position extending upwardly and outwardly with respect to said roof top and in the collapsed position extending downwardly and outwardly with respect to said rood top.

4,453,351

ENCLOSED STRUCTURE

John V. Moore, 702/22 Doris St., North Sydney, N.S.W., Australia

PCT No. PCT/AU81/00006, 371 Date Sep. 10, 1981, 102(e) Date Sep. 10, 1981, PCT Pub. No. WO81/02035, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 15, 1981, Ser. No. 302,413
Claims priority, application Australia, Jan. 15, 1980, PE2016
Int. Cl.³ E04H *7/00*
U.S. Cl. 52—82 **5 Claims**



1. A structure having a roof and corner-less side wall encompassing a space to receive particulate solids, said structure comprising:

a foundation,

a frame fixed to the foundation so as to be supported thereby, said frame including a plurality of generally upwardly extending posts fixed at their lower ends to said foundation and arranged in spaced relationship so as to generally define the position of said wall, a plurality of girts extending generally horizontally between said posts;

cladding located internally of and fixed to said frame so as to provide said wall, said cladding including first cladding sheets extending horizontally around the entire wall to provide a lower wall portion, said lower wall portion being fixed to said foundation so as to extend upwardly therefrom to a predetermined height and having sufficient rigidity to withstand pressures to be applied thereto by said particulate solids and second cladding sheets in the form of vertically corrugated sheets extending horizon-

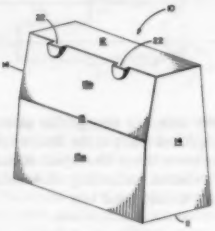
tally around the entire wall so as to provide an upper wall portion, said upper wall portion being fixed to said lower wall portion so as to extend upwardly therefrom and being fixed to said girts so as to be supported thereby.

4,453,352

REFRACTORY BRICK WITH EXPANSION ALLOWANCE

Jim E. Allen, Pleasanton, and Jacques R. Martinet, Danville, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 18, 1982, Ser. No. 410,153
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—98 **5 Claims**



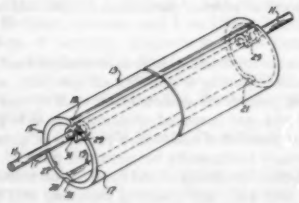
1. In a refractory brick having opposed top and bottom faces, opposed first and second end faces extending from the top to the bottom face, and opposed first and second side faces, the improvement wherein at least one of said side faces is divided into two sections, a lower section extending from the bottom face at least one-fourth the distance toward the top face and an upper section extending from the top face at least one-quarter the distance toward the bottom face, the upper section being at a slightly greater angle to the opposed side face than is the lower section and having at least one raised portion of a height such that the upper surface of the raised portion lies substantially in the plane of the lower section extended and of planar extent such that the total area of the raised portion is diminutive compared to the total area of the side face on which it is located, whereby the raised portion is adapted to collapse and permit expansion of the brick when it is heated.

4,453,353

GUY WIRE PROTECTOR

Bradley V. Killop, Brighton, and Robert R. Rogers, Rochester, both of Mich., assignors to Robin Products Company, Farmington Hills, Mich.

Filed Sep. 14, 1981, Ser. No. 301,545
Int. Cl.³ E04H *12/20*; H01B *7/24*
U.S. Cl. 52—147 **3 Claims**



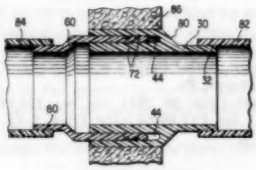
1. A wire protector and guard integrally fabricated from a flexible plastic material, comprising: an elongated outer tubular portion defined by a pair of semi-cylindrical tube sections integrally joined along a longitudinal axis by a flexible hinge connection defined by a longitudinal junction between said semi-cylindrical tube sections having a reduced thickness providing a resilient integral flexible hinge, and said tube sections having opposed free edges adapted to receive and enclose a wire, and an integral generally C-shaped clip means having a radius smaller than said outer tubular portion comprised of a pair of adjacent arcuate portions integrally joined to the inner surface of said tubular portion on opposed sides of said flexible hinge connection, said clip means having opposed free edges opening generally toward said tubular sections free ends, whereby opening said tubular portion about said flexible hinge connection opens said C-shaped clip means to receive a wire therein, and closing said tubular portion closes said clip means to securely retain said wire.

4,453,354

PIPE SUPPORT COUPLING AND METHOD OF USING SAME

Gerold J. Harbeke, 2807 S. Military Trail, Lake Worth, Fla. 33463

Continuation-in-part of Ser. No. 94,928, Nov. 16, 1979, Pat. No. 4,313,286. This application Sep. 24, 1981, Ser. No. 305,194
Int. Cl.³ E04B *5/48*
U.S. Cl. 52—220 **14 Claims**



1. A device adapted to be embedded in an at least initially form-sustained masonry floor of a building structure for supporting piping in connected relationship thereto, said device comprising:

(a) a substantially rigid unitary member including a tubular center portion and tubular end portions integrally formed with said center portion for mating with said piping, said center and end portions having inner and outer surfaces defining a continuous wall,

(b) flange means integral with one of said end portions for attaching said device to said form, said flange means having a plurality of spaced apart grooves on a face thereof for engaging said form to prevent the passage of fluid therebetween,

(c) anchor means integrally formed with said center portion intermediate said end portions for preventing axial movement of said device in said masonry floor after it has cured, and

(d) a plurality of circumferentially extnding, spaced-apart grooves formed on the outer surface of at least said center portion for preventing the passage of fluid between said wall and said masonry floor.

4,453,355

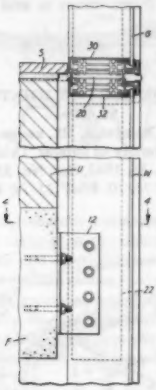
CURTAIN WALL CONSTRUCTIONS

Richard L. Stoakes, "Clouds", Northdown Rd., Woldingham, Surrey, England

Filed Jul. 27, 1982, Ser. No. 402,244
Claims priority, application United Kingdom, Jul. 28, 1981, 8123196
Int. Cl.³ E04H *1/00*; E04C *3/30*
U.S. Cl. 52—235 **8 Claims**

1. A curtain wall for a multi-storey construction having a load-bearing structure comprising a series of vertically spaced members to which the curtain wall is secured, said curtain wall comprising a series of upwardly extending mullions and a series of transoms at spaced elevations in the vertical extent of

the wall, said mullions and transoms being secured together to form a framework of said wall, each mullion being formed by a plurality of elongate members, means for securing said elongate mullion members to respective vertically spaced members of the structure, each adjoining pair of elongate mullion members having respective ends facing each other, a gap being provided between said facing ends to permit relative longitudinal movement between said adjoining pair of mullion members, each said gap being disposed at the elevation of a transom, and said transom comprising upper and lower elements attached to the respective adjoining mullion members to be relatively movable therewith towards and away from each other, said transom having interengagement means between said elements of the transom permitting relative movement longitudinally of said elements as well as said movement towards and away from each other, and external sealing means extending between said relatively movable transom elements.

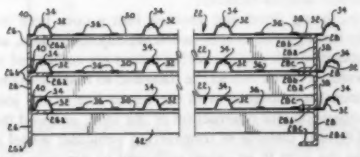


4,453,356

MODULAR PANEL SYSTEM FOR TEMPORARY BUILDINGS

Ronald E. Kellogg, and Robert L. Voss, both of Dodge County, Nebr., assignors to Kelly Klosure Systems, Fremont, Nebr.

Filed Jun. 25, 1982, Ser. No. 392,270
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—293 **6 Claims**



1. A temporary building structure which can be disassembled and transported in disassembled form for erection at different sites, said building structure comprising:

a plurality of panels each having a generally rectangular frame on the margins thereof;

a pair of side members on said frame each having a generally flat flange and a generally flat plate portion oriented substantially perpendicular to said flange, the side members of adjacent panels being located and arranged to be positioned against one another with the plate portions thereof directly against one another to secure the adjacent panels side by side for formation of the building structure;

a pair of end members on said frame interconnecting said side members, each end member having a generally flat flange and the flanges of said side and end members being substantially coplanar;

a sheet of facing material for each panel secured to the flanges of said side and end members to span the frame of the panel, each sheet having a plurality of ribs thereon extending generally parallel to said side members and providing ridges on an outwardly facing surface of the sheet and corresponding grooves on an inwardly facing surface of the sheet;

detachable fastening means for securing the plate portions of adjacent panels directly against each other to connect the panels in a configuration defining the building structure; and

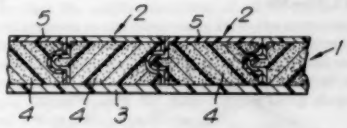
an edge portion of each sheet extending beyond one side member of the frame and overlapping the adjacent sheet when the plate portions of the adjacent panels are secured together, said edge portion of each sheet having one rib thereon which overlaps a mating rib located adjacent the other side member on the adjacent sheet in a manner whereby the ridge of said mating rib is closely received in the groove of said one rib to provide a watertight joint between each pair of adjacent panels.

4,453,357

WALL STRUCTURE, WALL ELEMENT FOR USE IN THE WALL STRUCTURE AND METHOD FOR MAKING THE SAME

Dagfinn Zwilgmeyer, Halden, Norway, assignor to Sentralinstitutt for Industriell Forskning, Oslo, Norway

PCT No. PCT/NO80/00014, 371 Date Dec. 8, 1980, 102(e) Date Dec. 8, 1980, PCT Pub. No. WO80/02303, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 16, 1980, Ser. No. 220,044
Claims priority, application Norway, Apr. 20, 1979, 791322
Int. Cl.³ E04C *1/16, 1/26;* B32B *3/18*
U.S. Cl. 52—309.8 **16 Claims**



1. A wall structure which can be used to construct objects such as vessels, tanks, washing towers, tubes and boat hulls, said wall structure comprising

a multiplicity of separate, interengageable elongated wall elements, each of said elongated wall elements consisting of (a) an elongated core of expanded hard plastic and having an upper and a lower surface and opposite side surfaces, the side surfaces of each core being shaped to provide for engagement with other of said elongated wall elements adjacent thereto, and (b) a separate layer of non-expanded plastic integrally adhered by coextrusion to said core over at least its upper surface, but not its lower surface; said elongated wall elements being positioned side-to-side so as to be engaged with one another and are also adhered together, the layers of non-expanded plastic on the upper surfaces of said elongated wall elements forming a smooth but discontinuous first outer surface of said wall structure, and

a single layer of reinforced plastic adhered directly to the lower surfaces of all said engaged elongated wall elements, said single layer forming a smooth, continuous second outer surface of said wall structure.

4,453,358

INSULATED ONE-PIECE ROOF

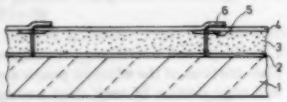
Hermann Gruber, Leverkusen; Wolfgang Wellner, Cologne; Hermann Diebl, Mannheim, and Dieter Mönig, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Correcta, GmbH, Bad Wildungen, both of, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,391

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033091

Int. Cl.³ E04C *1/00*

U.S. Cl. 52—309.8 **4 Claims**



1. An insulated one-piece roof for use for heatable rooms comprising at least three layers, the first layer being a solid or other load-bearing construction, the second layer being an insulating board and the third layer being a prepared roofing, said one-piece roof further characterized in that the characteristic value $\mu \cdot s$, where μ is the diffusion resistance index and s is the layer thickness of the constituent material, of the vertically adjacent layers, decreases outwardly, said prepared roofing being firmly joined to the underlying insulating board and having a characteristic value $\mu \cdot s$ of less than 4m, and further characterized in that the prepared roofing consists of a polyether-based urethane having a breaking slongation according to DIN 53504 of at least 120% and a diffusion resistance index of at most 4,000.

4,453,359

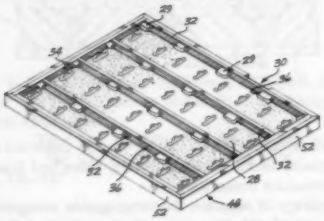
BUILDING WALL PANEL

Ralph C. Robinson, Redmond, Wash., assignor to Olympian Stone Company, Inc., Redmond, Wash.

Filed May 7, 1982, Ser. No. 375,813

Int. Cl.³ E04C *2/22*

U.S. Cl. 52—389 **21 Claims**



1. A building wall panel, comprising:

(a) a plurality of thin granite or marble panels positioned in adjacent relationship to each other;

(b) anchor means mounted in the back surfaces of each of said granite or marble panels and extending rearwardly therefrom;

(c) a backing layer of glass fiber reinforced concrete overlying the rear of said granite or marble panels and encasing said anchor means, said fiber reinforced backing layer initially being of slurry composition and upon solidifying said reinforced backing layer supporting said facing panels through said anchor means;

(d) support frame means overlying the back side of said backing layer opposite said granite or marble panels at locations separate from the locations of said anchor means, said support frame means formed from a plurality of metal first members having attachment means extending outwardly therefrom; and

(e) additional amounts of glass fiber reinforced concrete overlaying portions of said attachment means and adjacent portions of said backing layer, said additional amounts of glass fiber reinforced concrete being initially of slurry composition and upon solidifying said additional amounts of glass fiber reinforced concrete securely bonding said support frame means to said solidified backing layer.

4,453,360

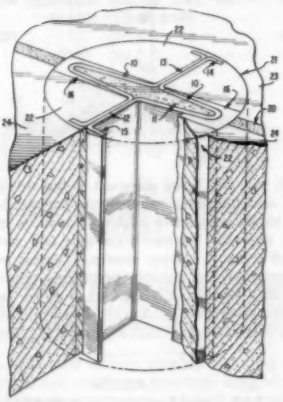
LOAD TRANSFER DEVICE FOR JOINTS IN CONCRETE SLABS

Ernest J. Barenberg, Champaign, Ill., assignor to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Jan. 15, 1982, Ser. No. 339,698

Int. Cl.³ E01C *11/10*; E04F *15/14*; E04B *1/68*

U.S. Cl. 52—396 **5 Claims**



1. A device transferring load across a joint in adjoining concrete pavement slabs which device comprises:

(a) a hollow, rigid diamond-shaped member the exterior faces of which are covered with resilient shielding means; and

(b) rigid anchoring means attached to opposite sides of the diamond-shaped member;

the device being fitted and grouted into a core hole drilled vertically through the joint between the adjoining slabs, and to be positioned so that the anchoring means are embedded in the grout to secure the device to the slabs and so that the diamond-shaped member is aligned with the center line of the joint to permit expansion and contraction of the joint; and said device being of rigidity capable of transferring vehicular wheel loading across the joint to an extent sufficient to minimize faulting of the adjoining slabs due to said vehicular wheel loading.

4,453,361

SCREW FASTENER ASSEMBLY, METHOD OF PROVIDING SAME, AND FASTENER SUITABLE FOR USE THEREIN

Tommy R. Hulsey, Wyomissing, Pa., assignor to Construction Fasteners, Inc., Wyomissing, Pa.

Filed Apr. 19, 1982, Ser. No. 369,353

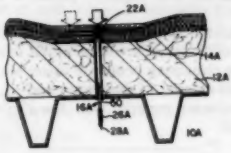
Int. Cl.³ E04B *1/78, 1/38*

U.S. Cl. 52—410 **16 Claims**

1. In a fastening system for securing a resilient layer of material to an underlying substrate by passing a screw fastener through said layer and screwing the threaded end thereof

through an opening in said substrate, the improvement wherein:

said screw fastener comprises screw threads limited to the portion of the shank of said screw fastener which lies on the opposite side of said substrate from said resilient layer when said fastener is in position and said layer is in a normal thickness state, the portion of said shank extending through said opening into said layer being smooth and free



of said threads, whereby upon application of abnormal forces to said fastener in the direction to compress said layer and move said screw fastener through said opening said free shank portion moves freely through said opening in one direction, and when said abnormal force is removed and said resilient material reexpands, said free shank portion can move freely in the opposite direction through said opening to permit such reexpansion of the layer.

4,453,362

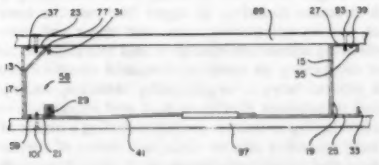
WALL SUPPORT DEVICE

Alden E. Rodgers, 3824 Scranton Dr., Fort Worth, Tex. 76118

Filed Jun. 21, 1982, Ser. No. 390,275

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—481 **7 Claims**



1. A wall support device for installation between spaced structural members in a wall, the structural members being of the type having external sidewalls arranged to define an open interior, comprising:

an elongated support section mounted between two spaced structural members in said wall and in the same plane as one of the sidewalls;

bracing means at one end of said support section extending outwardly from said support section approximately normal thereto for abutting an external sidewall of one of said spaced structural members; and

locking means at the end of said support section opposite said bracing means adapted to be received within the open interior of the other of said spaced structural members for securing the support section between the two spaced structural members.

4,453,363

STRUCTURAL ELEMENT BAR FOR BUILDINGS, OR THE LIKE

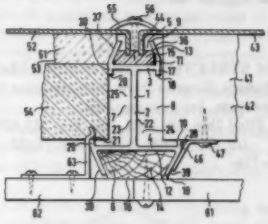
Ernst Koller, Paradiesstrasse 64, CH-4102 Binningen, Schweiz, Switzerland

Filed Feb. 12, 1982, Ser. No. 348,332

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112746

Int. Cl.³ E04B *2/60*

U.S. Cl. 52—481 **11 Claims**



1. A structural element for buildings, or the like, the element being a profiled bar of generally I-shaped cross-section, comprised of a web and two flanges at the opposite edges of the web, and the flanges extending both across and longitudinally along the web; the entire first one of the flanges being relatively narrower in its distance across the web to widthwise ends, and the entire second one of the flanges being relatively wider in that distance across the web to widthwise ends;

each flange having an outside facing away from the other flange, each flange terminating in side extensions at its widthwise ends spaced from the web and the side extensions extending toward the outside of the respective flange away from the other flange and each flange and its side extensions being shaped to define a first groove on its outside; a respective second groove being defined at each side of the web, between the two flanges;

the flanges and their side extensions being shaped so that all of the first and second grooves have a width dimension and so that the width dimension of all of the first and second grooves is narrower away from the connection of the flange with the web and is wider at the bottom of the groove where the flange is joined to the web; the second grooves being narrowed through the insides of both of the flanges, facing toward the other flange, being shaped to extend toward the other flange.

4,453,364

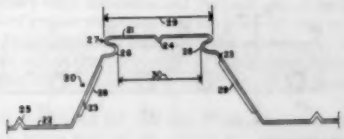
CORRUGATED STEEL DECKING SECTION

Raymond M. L. Ting, 318 Holiday Dr., Pittsburgh, Pa. 15237

Continuation-in-part of Ser. No. 153,260, May 27, 1980, abandoned. This application Nov. 3, 1981, Ser. No. 317,587

Int. Cl.³ E04C *2/32*

U.S. Cl. 52—630 **8 Claims**



1. In a steel floor decking section comprising a profiled steel sheet having plural crest surfaces in a common crest plane, plural valley surfaces in a common valley plane and sloping web surfaces connecting each said crest surface to the adjoining valley surface, whereby each said crest surface and its

contiguous sloping web surfaces form a raised flute, the said crest surfaces being a width greater than the spacing between the said crest plane and the said valley plane;

lateral connecting means disposed along each of the outer ones of said valley surfaces of said decking section;

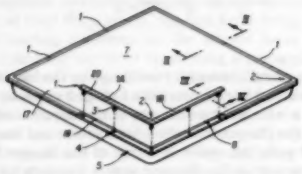
the improvement comprising a lengthwise groove which is uninterrupted for the length of the decking section and enters beneath the said crest surface in each of the said sloping web surfaces adjacent the top of said raised flute, wherein a flat plane which includes the said sloping surface intersects the said crest plane at or outside the adjacent side edge of the crest.

4,453,365

EDGE TRIM STRUCTURE FOR ACCESS FLOOR PANEL

Robert S. Gladden, Severna Park, Md., assignor to Tate Architectural Products, Inc., Jessup, Md.

Filed Dec. 29, 1981, Ser. No. 335,529
Int. Cl.³ E04C *2/38*; E04F *19/02*
U.S. Cl. 52—716 **14 Claims**



1. An edge trim structure for a horizontally oriented access floor panel having a horizontally oriented floor covering with a peripheral edge, mounted thereon, comprising:

at least a first and second separate horizontally planar edge tirm member mounted on said panel and abutting said peripheral edge of said floor covering wherein each of said first and second separate edge trim members includes a first and second edge trim leg member; and

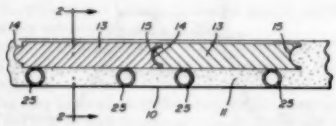
at least one continuous, one-piece edge trim corner member interconnecting said first and second edge-trim leg member of each of said first and second separate edge trim members wherein said panel further comprises a horizontally planar peripheral portion upon which said first and second horizontally planar edge trim members are mounted and a side wall portion having a flange horizontally extending therefrom connected to said peripheral portion of said panel.

4,453,366

PROCESS OF FORMING A CONTINUOUS WALL IN THE GROUND

Ugo Piccagli, 4511 Harry's La., Dallas, Tex. 75229

Filed Mar. 3, 1983, Ser. No. 471,729
Int. Cl.³ E04B *1/00*; E02D *27/00*
U.S. Cl. 52—742 **7 Claims**



1. A method of constructing an impermeable wall in the ground, comprising the steps of:

excavating a trench having a defined width in the ground,

replacing excavated material from the trench with bentonite water slurry,

placing interlocking, prefabricated concrete panels in the trench, the panels having a thickness less than the width of the trench, one side of the panels resting against one side of the trench,

placing guides in the trench between the other side of the panels and the other side of the trench to hold the panels upright and against the one side of the trench,

pouring concrete by tremie pipe in the bottom of the trench for a predetermined height replacing some of the bentonite water slurry,

grouting joints between adjacent panels to ensure a waterproof seal,

after the concrete and grouting has hardened back-filling remainder of the trench with selected material replacing most of the remaining bentonite water slurry and mixing with a small amount of the slurry, and

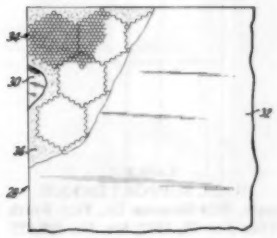
packing the selected material well down to form an impermeable wall.

4,453,367

HONEYCOMB CORE MATERIAL AND SANDWICH CONSTRUCTION STRUCTURAL BUILDING MATERIALS INCORPORATING SAME

Eugen J. Geyer, Huybergen, and Eugen K. Mössner, Bergen op Zoom, both of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 10, 1981, Ser. No. 282,145
Int. Cl.³ E04C *2/36*
U.S. Cl. 52—806 **6 Claims**



1. A structural building panel adapted to be thermoformed into three dimensional shapes without compromising its stiffness-to-weight ratio, said building panel comprising a sandwich structure including an upper face panel, a lower face panel, and an intermediate core, said upper and lower face panels being adhesively bonded to said intermediate core, the latter comprising an array of elongated extrusion products, each product being a longitudinally extending unitary piece formed of extruded plastic, each of said elongated extrusion products having an interior portion including a matrix of longitudinally extending interior walls, said matrix of interior walls dividing said interior portion in such manner as to define a regular array of hexagonal apertures extending longitudinally therethrough, said array of extrusion products being in abutting relationship, and being free of intermediate adhesive joints between the extrusion products within the array.

4,453,368

METHOD AND APPARATUS FOR AUTOMATICALLY PACKING ELONGATED FOOD ARTICLES IN CONTROLLED POSITIONS AND ORIENTATIONS

Walter W. Egee, Wallingford, Pa., assignor to Campbell Soup Company, Camden, N.J.

Continuation-in-part of Ser. No. 286,597, Jul. 24, 1981, abandoned. This application Apr. 30, 1982, Ser. No. 373,694
Int. Cl.³ B65B *19/34, 63/04*
U.S. Cl. 53—430 **8 Claims**

1. The method of packing elongated food products into a cylindrical container, with said food products positioned side-

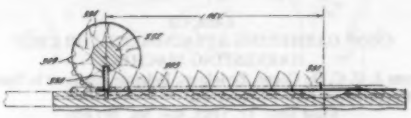
by-side around the inner periphery of said container, comprising:

placing a horizontal row of said food products side-by-side adjacent each other on a substantially flat flexible belt;

rolling up said belt with said food products thereon into a cylindrical configuration, with said food products forming a cylindrical array about the interior of said rolled-up belt;

sliding said cylindrical array of food products axially out of said rolled-up belt into said container;

wherein said rolling-up of said belt comprises moving the leading edge of said belt and following portions thereof along a cylindrical path concentric with a predetermined axis positioned above the level of said belt when flat;



wherein said rolling-up of said belt comprises providing relative horizontal motion of the flat portion of said belt toward said axis at a speed so correlated with the rate of rolling-up of said belt as to provide said movement along said cylindrical path;

wherein said providing of relative motion comprises moving said belt while holding said axis translationally fixed;

said method also comprising positioning a mandrel along said axis, about which said belt and said food products thereon are rolled up; and

wherein said moving of said leading edge of said belt comprises securing it to said mandrel at a constant distance therefrom during said rollling up of said belt.

4,453,369

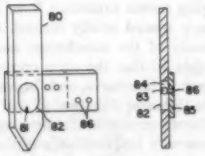
METHOD OF PRODUCING SEED MARKER TABS

Michael H. Estkowski, 1756 Outer Dr., St. Joseph, Mich. 49085

Division of Ser. No. 182,950, Sep. 2, 1980, Pat. No. 4,353,183. This application Jul. 28, 1982, Ser. No. 402,534

Int. Cl.³ A01C *1/04*

U.S. Cl. 53—432 **9 Claims**



1. An improved process for producing seed marker tabs comprising:

a first step of providing a tab element of vertically elongated proportions having a first lower end portion and a second upper end portion, a planting line dividing the tab element into said first lower end portion and said second upper end portion, said first lower end portion being inserted into a planting medium to a predetermined depth with the second upper end portion projecting above the planting medium, and said tab element being formed of biodegradeable material sufficiently rigid so as to be self-supporting when inserted into the planting medium,

a second step of providing an opening through the lower end portion of the tab element,

a third step of providing a backing material on the lower end portion of the tab element to close one end of the opening therethrough and thereby provide an area for receiving seeds,

a fourth step of providing the backing material closing the one end of the opening in the lower end portion of the tab element with a pattern of seed-receiving openings extending therethrough, the seed-receiving openings of specific number and depth to accommodate the type of seed received in each of said openings, and the seed-receiving openings specifically located with respect to the planting line to optimize the planting depth for each specific variety of seed mounted on the seed marker tab,

a fifth step of placing the tab on a relatively horizontal surface,

a sixth step of exposing the seed-receiving area of the tab to a dispersion of a random number of seeds of a specific variety for each tab element on an upper surface of the seed-receiving area provided on the lower end portion of the tab element,

a seventh step of applying a vacuum to the lower surface of the seed-receiving area of the seed marker tab to retain individual seeds in each of the seed-receiving openings provided in the seed-receiving area of the tab element,

an eighth step of removing the excess seeds from the the tab element,

a nineth step of covering the seed remaining in the seed-receiving area of the tab element with means for retaining the seed on the tab when the vacuum applied to the lower surface of the seed-receiving area of the tab element is removed, and

a tenth step of removing the vacuum when the retaining means is in place to hold the seed on the tab.

4,453,370

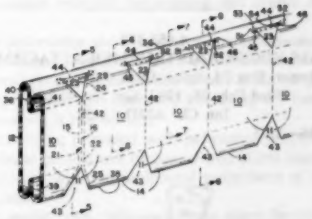
SQUARE ENDED BAG

Oliver R. Titchenal, North Ridgeville, Ohio, assignor to Basic Packaging Systems, Inc., Avon Lake, Ohio

Filed Sep. 14, 1981, Ser. No. 301,762

Int. Cl.³ B65B *43/08, 43/04;* B31B *49/04, 1/22*

U.S. Cl. 53—455 **12 Claims**



1. The method of making a chain of square ended bags each having a mouth and front and back walls, gusseted top and bottom ends and fore and aft seal sides from an elongated band, said method comprising the steps of:

(a) providing the band with overlying front and back walls and with longitudinal top and bottom gussets of dimensions such that both sides of the bottom gusset are of substantially equal dimension and the back side of the top gusset is of greater dimension than the front side thereof to form a longitudinally elongated portion of the band, and said front side of the top gusset is of a dimension substantially equal to the dimension of either side of the bottom gusset;

(b) forming continuous side seal legs of equal length at least part way across each of the gussets and simultaneously across the band between the gussets;

(c) forming closing seal legs in the back side of the top gusset and longitudinally of the band from the ends of the side seal legs and extending across the back side of the top gusset with each closing seal leg extending a distance less than one half the length of the back wall of the bag and thereby providing a mouth between the closing seal legs

and the back wall and top end of the bag and also in the longitudinally elongated portion of the band in the back side of the top gusset; and

(d) repeating steps b and c at a longitudinally spaced distance from the aforesaid seals to thereby form a series of bags in said band.

4,453,371

HARNESS FOR A HORSE

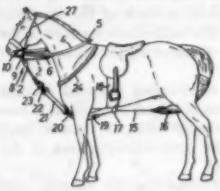
Thomas P. A. Abbott-Davies, Le Presbytere, Villers St. Leu, Oise 60, France

Filed Jun. 26, 1978, Ser. No. 919,295

Claims priority, application United Kingdom, Jul. 6, 1977, 28295/77

Int. Cl.³ B68B *1/00, 5/04*

U.S. Cl. 54—35 **8 Claims**



1. A training harness for a horse comprising: a first portion forked at one end to provide first and second side leashes, each leash being adapted to be connected at its end opposite said forked end to a respective rein of a bridle means, each side leash being movably supported by respective means adapted to be swivelably connected to a bit assembly of a bridle means; and a second portion comprising linear means connected at one end thereof to the forked end of said first portion, the other end of said second portion being adapted for connection to an element carried by the forequarters of a horse.

4,453,372

GRASS EDGER AND TRIMMER ATTACHMENT

Fred J. Remer, Box 74, Spiro, Okla. 74959

Filed Feb. 28, 1983, Ser. No. 452,063

Int. Cl.³ A01D *35/26*

U.S. Cl. 56—13.7 **4 Claims**

1. A universal grass edger and trimmer attachment adapted to be mounted on and driven by a rotary lawn mower having a mower housing, an engine mounted on top of and having an engine shaft extending vertically downward through the housing, and a mower blade fixed to the engine shaft beneath the housing: said attachment comprising first mounting means including selectively operable drive transmitting means adapted to be mounted as a unit on top of the housing, rotary flexible drive shaft means having a drive end mounted on said mounting means and having a driven end remote therefrom adapted to have a grass edger and trimmer fixed thereto, said drive transmitting means being adapted to extend vertically downward through an access opening formed in the top of the housing and being further adapted together with said engine shaft at a location beneath the housing and above the mower blade so as to provide a driving connection between said drive end of said flexible drive shaft means and said engine shaft on selective operation, and second mounting means having support means supporting said driven end of said flexible drive shaft means and having manually adjustable mounting means remote from said support means adapted to be mounted on top of the housing for providing manual positioning of said support means and driven end of said flexible drive shaft means in a storage position on top of the housing and one operating position in front of the housing and another operating position to one side of the housing.

4,453,373

CROP GATHERING ATTACHMENT FOR CROP HARVESTING MACHINE

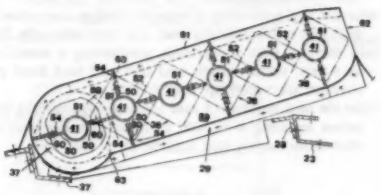
Frans J. G. C. De Coene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 11, 1982, Ser. No. 357,020

Claims priority, application United Kingdom, Mar. 16, 1981, 8108119

Int. Cl.³ A01D *41/06*

U.S. Cl. 56—14.6 **32 Claims**



1. A crop gathering attachment for a crop harvesting machine comprising crop receiving means operable, in use, to receive crop from the ground, first crop feeder means, and second crop feeder means disposed between the crop receiving means and the first feeder means, the second feeder means including a plurality of longitudinally spaced rotary members each in the form of shaft means on which are mounted a plurality of crop conveying means extending from the shaft means and relatively closely spaced axially thereof, the shaft means extending transversely of the attachment and being spaced relative to each other so that the crop conveying means of adjacent rotary members interleave, and the rotary members in use being rotated in the same direction so that they constitute in effect a moving floor operable to transfer crop from the crop receiving means generally longitudinally of the attachment to the first feeder means; the rotary member disposed immediately adjacent the crop receiving means being operable as an auger in cooperation .with a trough formed in a floor member extending beneath the rotary members, said floor member being inclined downwardly towards the trough whereby grain and other material separated from crop material as it is acted upon, in use, by the second feeder means falls to the floor member and gravitates to the trough.

4,453,374

QUICK-RELEASE SHIELD MOUNTING

John B. Kuhn, Mayville, Wis., assignor to Deere & Company, Moline, Ill.

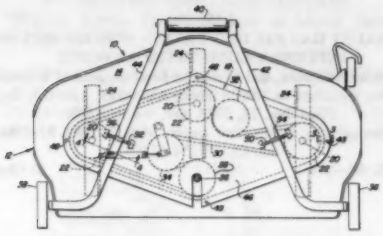
Filed Sep. 1, 1982, Ser. No. 413,909

Int. Cl.³ A01D *35/12, 67/02*

U.S. Cl. 56—320.1 **5 Claims**

1. In combination with a power transmission device comprising a plurality of drive elements rotatably mounted on a mower blade housing and covered by a drive shield, and at least one gauge element support secured to the housing and

extending above said drive shield, the improvement comprising: a quick-release latch means including at least one elongate member having a resiliently deflectable central portion joining first and second ends with the ends being connected to said



shield; and recessed surface means rigidly fixed to said gauge element support and located relative to said member such that the latter is resiliently deflected in a direction urging the shield toward the housing when said central portion of the member is received in said recessed surface means.

4,453,375

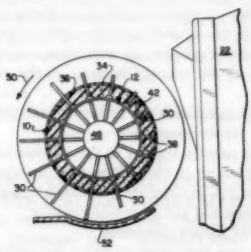
FEED AUGER ATTACHMENT

Robert D. Field, P.O. Box 307, Jonesville, La. 71343

Filed Dec. 13, 1982, Ser. No. 449,559

Int. Cl.³ A01D *89/00*

U.S. Cl. 56—364 **22 Claims**



1. A feed auger for a combine header and the like, comprising:

a generally cylindrical drum with means for mounting said drum for rotation about a longitudinal axis and with an outer surface;

first and second spiral flights mounted on said drum adjacent longitudinal ends thereof;

a central drum portion between said flights;

a plurality of feed fingers coupled to said drum and extending radially from said central drum portion; and

resilient and flexible attachment means mounted on and extending radially from said central drum portion about said fingers, and exposed over said outer surface.

4,453,376

AGRICULTURAL MACHINE FOR THE TEDDING OR CONDITIONING OF FODDER

Albert Wattron, Schwenheim, and Michel Quirin, Allenwiller, both of France, assignors to Belrecolt S.A., Marmoutier, France

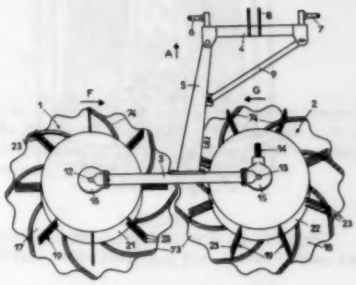
Continuation of Ser. No. 215,854, Dec. 12, 1980, Pat. No. 4,380,142. This application Dec. 27, 1982, Ser. No. 453,629

Claims priority, application France, Dec. 20, 1979, 79 31888

The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.

Int. Cl.³ A01D *49/00*

U.S. Cl. 56—370 **14 Claims**



1. In a machine for tedding cut herbage during forward movement of the machine on the ground,

in combination:

a support,

at least two drums each mounted on said support for rotation about an axis which is inclined upwardly and forwardly in respect of the direction of movement of the machine,

driving means operable for rotating said drums about said axis,

flexible deformable skirts having an outer diameter and an inner diameter separated by a predetermined width and mounted on the lower portion of said drum for joint rotation therewith, and operative for lifting the cut herbage and moving it rearwardly,

said skirts being provided with peripheral projections, the peripheral projections of one of said skirts intermeshing operatively with the peripheral projections of the other skirt, and

tedding means cooperating with said skirts for tedding the lifted herbage prior to its deposition on the ground,

said tedding means including a plurality of ribs provided on the upper surface of said skirt and extending from said drum to the outer periphery of said skirts while being oriented in the direction of rotation of said drum.

4,453,377

TWO-FOR-ONE TWISTING SPINDLE

Siegfried Inger, and Heinz Fink, both of Krefeld, Fed. Rep. of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,762

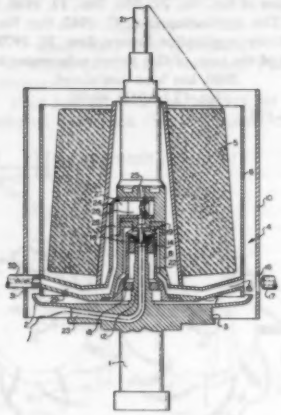
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118873

Int. Cl.³ D01H *15/00, 7/86, 13/16*

U.S. Cl. 57—279 **14 Claims**

1. A two-for-one twisting spindle having a stationary portion, a spindle rotor and a hollow axle above said rotor, in combination with a compressed-air-actuated means adapted to influence the running through of a yarn disposed in said hollow axle of said spindle above said spindle rotor, a compressed air passage communicating with said compressed-air-actuated means and said hollow axle, and means movable substantially

at right angles to the path of the yarn in said compressed air passage, said compressed air passage extending through a stationary portion of said spindle, said compressed-air-actuated means having a compressed-air cylinder whose axis intersects said hollow axle of said spindle at right angles thereto, said



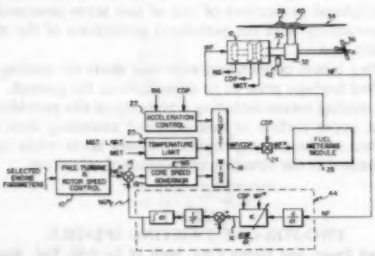
cylinder having an outer wall having two openings located diametrically opposite one another and in alignment with said hollow axle of said spindle, and the said means of said compressed-air-actuated means comprising a piston displaceable within said compressed-air cylinder and responsive in displacement in said cylinder to compressed air.

4,453,378

TORSIONAL MODE SUPPRESSOR

Raymond D. Zagranski, Somers, and James J. Howlett, North Haven, both of Conn., assignors to Chandler Evans, Inc., West Hartford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,494
Int. Cl.³ F02C *3/10, 9/28*
U.S. Cl. 60—39.02 **4 Claims**



1. A method of damping oscillation in a helicopter rotor drive train, the drive train including a power turbine driven by the discharge of a gas generator, said method comprising the steps of:

generating a signal commensurate with the speed of the power turbine;

filtering the speed signal to eliminate variations thereof below a preselected frequency;

adjusting the time constant of the filtered signal to provide a signal which is out of phase with the sensed speed variations; and

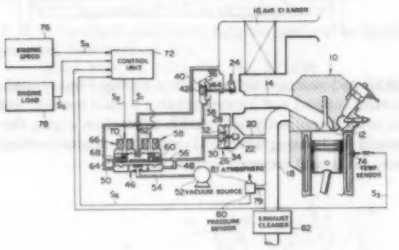
modulating the flow of fuel to the gas generator as a function of the adjusted signal to cause the torque produced by the free turbine to oppose drive train speed variations above the preselected frequency.

4,453,379

EXHAUST GAS RECIRCULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshihisa Kawamura, and Kichihiko Dozono, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 24, 1983, Ser. No. 460,563
Claims priority, application Japan, Mar. 2, 1982, 57-32868
Int. Cl.³ F02M *25/06*
U.S. Cl. 60—278 **10 Claims**



1. An exhaust gas recirculation system for an internal combustion engine having a combustion chamber and an exhaust passage, the exhaust passage extending from the combustion chamber to the atmosphere so as to conduct exhaust gas from the combustion chamber to the atmosphere, the exhaust gas recirculation system comprising:

(a) first means for directing the exhaust gas back to the combustion chamber to recirculate the exhaust gas through the combustion chamber;

(b) second means, associated with the first means, for controllably determining the percentage of the exhaust gas recirculated;

(c) third means for sensing the average pressure in the exhaust passage; and

(d) fourth means, responsive to the sensed exhaust pressure, for controlling the second means in such a manner that the percentage of the exhaust gas recirculated is independent of variations in the average pressure in the exhaust passage.

2. An exhaust gas recirculation system as recited in claim 1, wherein the first means comprises:

(a) an air intake passage leading to the combustion chamber to conduct fresh air to the combustion chamber; and

(b) an exhaust gas recirculation passage connecting the exhaust passage and the air intake passage;

wherein the second means comprises:

(c) an exhaust gas recirculation valve for controlling the effective cross-sectional area of the exhaust gas recirculation passage;

and wherein the fourth means controls the exhaust gas recirculation valve in response to the sensed exhaust pressure in such a manner as to reduce the effective crosssectional area of the exhaust gas recirculation passage as the sensed exhaust pressure increases.

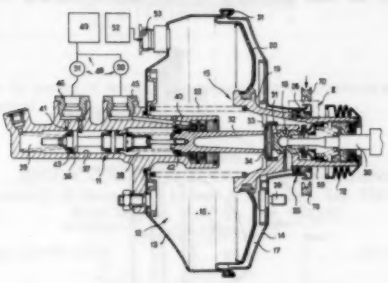
4. An exhaust gas recirculation system as recited in claim 2, further comprising an exhaust cleaner disposed in the exhaust passage downstream of the connection with the exhaust gas recirculation passage for removing soot and smoke from the exhaust gas flowing therethrough, and wherein the third means senses the average pressure in the exhaust passage upstream of the exhaust cleaner.

4,453,380

METHOD AND APPARATUS FOR SETTING THE IDLE STROKE OF A MASTER-CYLINDER/SERVO ASSEMBLY, AND BRAKE CONTROL UNIT ADJUSTED BY IMPLEMENTING THIS METHOD

Guy Meynier, Bondy, France, assignor to Societe Anonyme DBA, Paris, France

Filed Aug. 12, 1982, Ser. No. 407,389
Claims priority, application France, Sep. 22, 1981, 81 17839
Int. Cl.³ B60T 17/22
U.S. Cl. 60—534 8 Claims



1. Method of setting the idle stroke of the piston or pistons of a master-cylinder mounted at one end of a casing of an assistance servo including an assistance piston coupled to an aforesaid piston of said master-cylinder, said piston(s) of said master-cylinder delimitating within said master-cylinder at least one pressure-chamber into which opens at least one supply orifice, said assistance piston (15) being normally urged in operative condition against a stop (25) arranged at the opposite end of said casing of the servo (12), characterized in that it comprises the following steps:

assembling at least most of the constitutive active elements of the master-cylinder (11) and the servo (12), while leaving said stop (25) temporarily displaceable axially with respect to said casing;

displacing said stop (25) while testing fluid communication between said supply orifice (40,41) of said master-cylinder and said corresponding pressure chamber (38,39);

finding a reference position for said stop (25), wherein such a communication is initiated;

displacing said stop by a predetermined amount from this reference position, as a function of the idle stroke required; and

finally fixing said stop (25) to said casing.

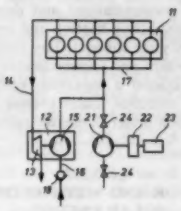
4,453,381

INTERNAL COMBUSTION ENGINE WITH AN EXHAUST GAS TURBOCHARGER

Hans Dinger, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,370
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100732
Int. Cl.³ F02B 37/00
U.S. Cl. 60—612 3 Claims

1. An internal combustion engine comprising exhaust gas turbocharger means including charging air compressor means driven by exhaust gas turbine means, air lines for said compressor means which include automatic valve means operable to enable an air flow only from the compressor means in the direction toward the internal combustion engine, at least one auxiliary compressor means driven by an auxiliary drive means, said auxiliary compressor means being operable to take over the supply of the internal combustion engine with charging air in case of inadequate exhaust gas energy of the internal combustion engine, characterized in that the auxiliary compressor means is securely connected with an additional flywheel means, is driven continuously by the auxiliary drive means during operation of the internal combustion engine, is



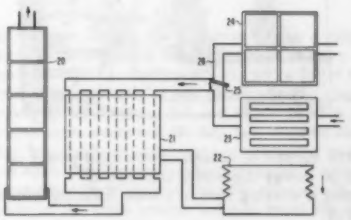
operable to be closed off on its air-side by a closure means for reducing the driving power thereof and is operable to be engaged in case of need to supply charging air to the internal combustion engine by opening said closure means.

4,453,382

CONVECTION POWERED SOLAR ENGINE

Louis R. O'Hare, 1041 Ponderosa Apt. 2, Fort Collins, Colo. 80521

Filed Sep. 5, 1980, Ser. No. 184,205
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.11 6 Claims



1. A thermal energy to mechanical energy converter comprising:

(1) a thermal energy to heated air conversion means by which air is drawn over a quantity of material containing thermal energy,

(2) and an air cooling means providing a source of cooling air and being in the form of ducting with cooling fins located in a cool place and

(3) a heat exchanging and fluid pressurizing means in the form of a sealed cavity containing a fluid such as air, said cavity being capable of repeated heating and cooling by alternate flows of first heated and then cooled air being drawn through ducting extending through said cavity and with said cavity being capable of pressurization during the heating periods by the thermal expansion of the heated fluid within the cavity and said cavity also being capable of depressurization during said cooling periods by the contraction of the cavity fluid, and

(4) an intermittent thermal energy cycling means in the form of a convection column heated by contact with a quantity of material containing thermal energy, said column being thereby capable of heating the air within its internal cavity and by causing the heated air to rise within to provide a draft at the base of said column, and said column being in series fluid flow communcation by means of valving first with said heat exchanging means and with the thermal energy to heated air conversion means and then in a second period with said heat exchanging means and said air

cooling means, said energy cycling means thereby being capable of providing alternate drafts of air first from said thermal energy to heated air conversion means into said heat exchanging means and then secondly from said cooling means to said heat exchanging means, and

(5) a fluid pressure to mechanical energy conversion means by which the pressurizations and depressurizations effected by the respective heating and cooling of the fluid within said cavity are connected by ducting to an expandable cavity in which said pressurizations and depressurizations interact against a moveable surface to move the surface in one direction under pressurization and in the opposite direction under depressurization.

4,453,383

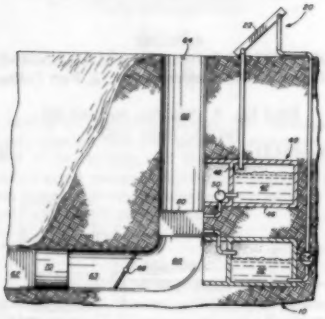
APPARATUS FOR AND METHOD OF UTILIZING SOLAR ENERGY

Wayne H. Collins, 337 Essex St., Kearny, Ariz. 85237

Filed Jul. 27, 1981, Ser. No. 287,195

Int. Cl.³ F03G 7/02

U.S. Cl. 60—641.12 **12 Claims**



1. The method of generating electrical power on demand with solar energy comprising the steps of:

heating a working fluid in a solar collector with solar energy;

storing said heated working fluid in a tunnel of an underground mine;

inducing a draft in a shaft of said mine by rejecting heat from said heated working fluid to air at a lower end of said shaft; and

intercepting said draft with a flow responsive generator to thereby produce electrical power.

4,453,384

FUEL BURNERS AND COMBUSTION EQUIPMENT FOR USE IN GAS TURBINE ENGINES

George Pask, Stanton-by-bridge, England, assignor to Rolls-Royce Limited, London, England

Filed Dec. 22, 1981, Ser. No. 333,572

Claims priority, application United Kingdom, Feb. 21, 1981, 8105578

Int. Cl.³ F02C 7/22

U.S. Cl. 60—737 **10 Claims**

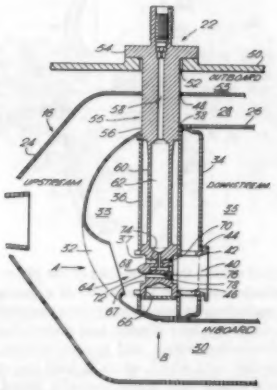
1. Combustion equipment for a gas turbine engine comprising:

an annular casing having a plurality of circumferentially arranged equi-spaced holes;

an annular flame tube coaxially positioned within and spaced from said annular casing, said annular flame tube having a corresponding number of circumferentially equi-spaced holes coaxially aligned with the holes of said casing:

a plurality of tubes extending radially across said annular flame tube, each tube being coaxial with the corresponding hole in the annular flame tube and the corresponding hole in the annular casing, each tube extending normal to an axis of said annular flame tube, each tube having a duct extending therethrough with an axis normal to the axis of the tube and parallel to the axis of said annular flame tube;

a plurality of fuel burners, each fuel burner comprising a cylindrical fuel feed arm having a fuel passage therethrough, a fuel injector having a cylindrical body coaxial with and joined in end-to-end relationship with said cylindrical fuel feed arm, said fuel injector having a first passage in said cylindrical body communicating with said fuel feed passage in said fuel feed arm, said fuel injector having an air duct extending through said cylindrical body



thereof, said air duct having an axis normal to the axes of said cylindrical body of the fuel injector and said fuel feed arm, said fuel injector having at least a second passage in said cylindrical body communicating with said first passage therein and with said air duct for injecting fuel into said air duct, each fuel burner extending coaxially through aligned holes in said annular casing and said annular flame tube and through the radial tube in said flame tube, said fuel injector of said fuel burner being positioned in said duct in said radial tube, the axis of said air duct in said cylindrical body being coincident with the axis of the duct in said radial tube.

4,453,385

DEVICE FOR REGULATING THE TEMPERATURE OF MATERIALS

Georg May, Marienstrasse 54, 605 Offenbach, Fed. Rep. of Germany

Filed Jun. 25, 1982, Ser. No. 392,344

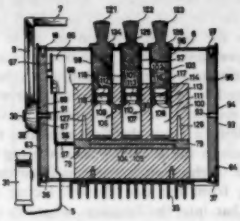
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149624

Int. Cl.³ F25B 21/02

U.S. Cl. 62—3 **21 Claims**

1. A device for regulating the temperature of material in a container which is, in turn, surrounded by a good heat-conducting medium attached to an electro-thermic element and arranged such that the container can be removed from one side of the device and also inserted into the device on the same side, characterized in that between the outwardly directed surface of said side of the device and the good heat-conducting medium an insulation of a predetermined thickness is provided, said insulation having at least one perforation permitting a container to be inserted into and removed from the good heat-

conducting medium, and that a gripper is provided, the length of which is at least the same as the thickness of the insulation



and by means of which the container can be removed and/or inserted.

4,453,386

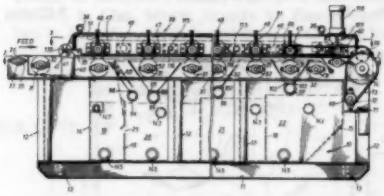
HIGH CAPACITY MAT CLEANING MACHINE

Ronald W. Wilkins, 3215 Avenue K, Bay City, Tex. 77414

Filed May 21, 1982, Ser. No. 380,692

Int. Cl.³ D06B *1/02*

U.S. Cl. 68—19.1 **23 Claims**



1. A washing machine for use in cleaning mats or the like of the type having nap on one side, comprising: tank means having spaced side walls and front and rear end walls; conveyor means mounted on said tank means for moving a mat in a substantially horizontal plane along the top of said tank means with the nap of said mat facing down, said conveyor means having an entrance adjacent the forward end of said tank means and an exit adjacent the rearward end thereof; transverse header means extending between said side walls below said conveyor means; a first row of nozzles on said header means for directing substantially flat sprays of a washing liquid in an upward and forward direction whereby said sprays impinge against the sides of said nap at an angle with respect to the horizontal path of travel of said mat that is in the range of from 30° to 40°; and a second row of nozzles on said header means for directing substantially flat sprays of a washing liquid in an upward and rearward direction whereby said sprays impinge against the opposite sides of said nap at an angle with respect to the horizontal path of travel of said mat that also is in the range of 30° to 40°, the impingement of said sprays on the opposite sides of said nap functioning to turn said nap as the mat is conveyed over said header means to provide a thorough cleaning action.

4,453,387

TRUNK TYPE LOCK WITH THROW AWAY KEY

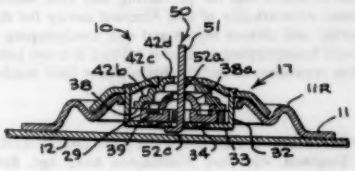
Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed Feb. 1, 1982, Ser. No. 344,808

Int. Cl.³ A45C *13/12;* **E05B** *11/00, 19/08, 19/26, 65/48*

U.S. Cl. 70—75 **10 Claims**

1. In a lock for trunks or the like having separable upper or lower sections, a latching plate for attachment to the upper section of the trunk having a circular keeper opening therein, a hasp assembly having an attachment plate to be affixed to the lower trunk section, a hasp member hinged to the attachment plate having a free end portion to overlie said keeper opening and adjacent portions of the latching plate when in mated position, a hollow cylindrical bolt housing of cup-shaped configuration fixed to and projecting rearwardly of the hasp member to nest in the keeper opening when the hasp member and latching plate assume the mated position, a pair of spring biased latching bolts supported in the bolt housing for movement to and from projected positions to interlock behind latching plate portions bounding the keeper opening when the hasp member is in said mated position, an actuator disk concentrically rotatable about a center axis of the cylindrical housing having members intercoupled with the latching bolts to withdraw them to an unlocked position upon rotation of the actuator disk through a selected arc, and a key barrel member positioned forwardly adjacent the actuator disk having a key slot therein; the improvement comprising a throw away key captured in assembled relation with the cylindrical bolt housing having a blade portion extending through said key slot in the key barrel and a handle portion disposed externally forwardly adjacent



the hasp member, the key blade portion having a major leg extending substantially along the center axis of said key barrel and actuator disk and cylindrical housing and a driver formation displaced eccentrically of said center axis to engage surface portions of the actuator disk and impart rotation to the actuator disk upon rotation of the key, said actuator disk and cylindrical housing having openings to receive said major leg of the key blade therethrough, said key blade portion being an integral one-piece blade member bendable transversely to the major plane of the blade portion and said major leg thereof having a bendable end tab portion integral with the remainder of the blade portion protruding through said center opening of said cylindrical housing and normally disposed in capturing position extending substantially perpendicular to said center axis behind and immediately adjacent rear wall portions of said cylindrical housing to capture the key in actuator disk operating condition, and said bendable end tab portion being bendable into substantial longitudinal axial alignment with said major leg permitting withdrawal of the throw away key from the bolt housing and the key slot of said key barrel.

4,453,388

LOCKING FUEL CAP

Steven F. Baker, Bellevue, and Albert D. Johnston, Huron, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

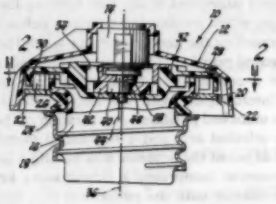
Filed Sep. 20, 1982, Ser. No. 419,945

Int. Cl.³ B05D *55/14*

U.S. Cl. 70—165 **3 Claims**

1. A locking fuel cap comprising; a handgripping portion; a lock mechanism carried by said handgripping portion; closure means secured within said handgripping portion and including a threaded portion for securing said fuel cap in a fuel fill tube and a recessed cavity; eccentric mounting means connected to rotate with the handgripping portion; cam means disposed in said recessed cavity and being operatively connected through said eccentric mounting means for unitary rotation with said handgripping poriton; and a cam engaging means on said lock mechanism for centering said cam means in said recess when

said lock mechanism is locked and said handgripping portion is rotated in a cap removal direction for thereby preventing rotation of said closure means, for permitting said cam means to be positioned eccentrically in said recessed cavity for providing a rotary drive connection between said handgripping portion and said closure means when said lock mechanism is



unlocked and said handgripping portion is rotated in the cap removal direction and for permitting said cam means to be positioned eccentrically in said recessed cavity for drivingly connecting said closure means and said handgripping portion when said handgripping portion is rotated in a cap installation direction regardless of the condition of the lock mechanism.

4,453,389

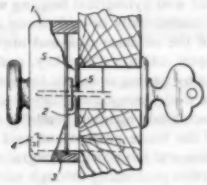
PROTECTIVE DEVICE FOR THE DOOR-LOCK

Lazar Kaufman, 454 Fort Washington Ave., Apt. 50A, New York, N.Y. 10033

Filed Oct. 24, 1979, Ser. No. 87,734

Int. Cl.³ E05B *63/00*

U.S. Cl. 70—416 **63 Claims**



1. Protective apparatus for a lock assembly including a housing, a bolt mechanism at least partially disposed in the housing, means separating the bolt mechanism which is in the housing from the exterior of the housing, the housing being adapted to be mounted to a structure with the means for separating facing the structure, a connecting bar extending into the housing past the means for separating when the lock assembly is mounted for use, the connecting bar being adapted to be coupled to and actuated by an exterior locking means, and means for coupling the connecting bar to the bolt mechanism to actuate the bolt mechanism upon actuation of the connecting bar by the exterior locking means, the protective apparatus being adapted to be removably coupled to the lock assembly and to cooperate with structure normally provided as part of the lock assembly when the lock assembly is mounted for use,

the protective appartus comprising at least one plate-like element adapted to be mounted adjacent the means for separating between the means for separating and the structure to which the housing is adapted to be mounted when the lock assembly is mounted for use, the plate-like element being movable relative to the housing from a first position when the connecting bar extends to the coupling means to a second position when the connecting bar is separated from the coupling means, elastically deformable means acting in cooperation with at least part of said normally-provided lock assembly structure for moving the plate-like element relative to the housing from the first position to the second position, at least one of the plate-like element and the elastically deformable means engaging at least part of said normally-provided lock assembly structure in the second position so as to substantially prevent movement of the plate-like element from the second position to the first position when the lock assembly is mounted for use, the connecting bar when the lock assembly is mounted for use restraining movement of the plate-like element from the first position, the plate-like element when in the second position being operative to block access to the coupling means from the exterior of the housing from the side thereof facing entry of the connecting bar into the housing, whereby unauthorized actuation of the bolt mechanism can be prevented when the connecting bar has been separated from the coupling means.

4,453,390

COMBINATION LOCK MONITORING SYSTEM

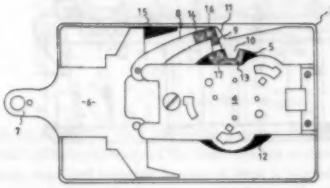
Peter G. Moritz, Werribee, and Simon L. Harders, Mordialloc, both of Australia, assignors to Wormald International Limited, Crows Nest, Australia

Filed Jan. 6, 1982, Ser. No. 337,238

Claims priority, application Australia, Jan. 14, 1981, PE7229

Int. Cl.³ E05B *39/04*

U.S. Cl. 70—434 **7 Claims**



1. A monitoring system for a combination lock which includes a first apertured, rotatable combination wheel, a withdrawable lock bolt mechanism, and a lock drop arm enterable within the aperture in said wheel to permit withdrawal of said bolt mechanism, said monitoring system comprising two optical sensors each incorporating an LED and a light sensing detector fixed with respect to the combination lock and focused on respective regions of the combination lock corresponding to a face of the rotatable combination wheel and a location occupied by a part of the lock bolt mechanism when withdrawn or otherwise by part of the lock drop arm when not entered within the aperture of said wheel, said face of the combination wheel having both light reflecting and non-reflecting areas and said parts of the lock bolt mechanism and said lock drop arm each having an area one of which areas is light reflecting and the other is non-reflecting, and electronic means responding to the combined response state of said optical sensors to provide an indication of the operated condition of the combination lock.

4,453,391

DEVICE FOR THE IN SITU REMOVAL OF DENTS IN COMPONENTS OF VEHICLES

Patrick J. McGee, 6 Kingsmere Gardens, Kilfennan, Londonderry, County Londonderry, Northern Ireland

Filed Mar. 23, 1982, Ser. No. 361,045

Claims priority, application United Kingdom, Mar. 26, 1981, 8109610

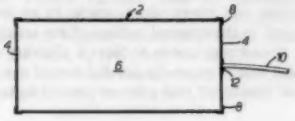
Int. Cl.³ B21D *1/12, 26/02*

U.S. Cl. 72—54 **2 Claims**

1. A process for the in situ removal of dents in components of vehicles comprising,

positioning a closed air-impervious inflatable vessel in a

cavity between a dented area and a support structure provided by the inner support structure of the vehicle and/or a separately provided backing member, said inflatable vessel being of a size to more than cover the dented area and to accomodate itself to the surface configuration of the dented area upon partial inflation;



introducing air under pressure into said vessel, whereby the vessel fills the cavity behind the dented area and accomodates itself to the surface configuration of the damaged area; and

introducing additional air under pressure into said vessel, whereby the vessel swells outwardly to restore the dented area substantially to its original form.

4,453,392

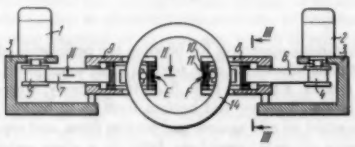
METHOD OF HARDENING SHAPED SURFACES BY PLASTIC DEFORMATION

Vladimir V. Klubovich; Gennady S. Basenok, both of Vitebsk; Leonid K. Konyshev, Minsk; Valery A. Sidorenko, Minsk; Anatoly K. Gleb, Minsk; Anatoly M. Zinder, Vitebsk; Mikhail N. Konnikov, Vitebsk, and Boris E. Gorelik, Vitebsk, all of U.S.S.R., assignors to Fiziko-Tekhnichesky Institut Akademii Nauk Belorusskoi SSR, Minsk, U.S.S.R.

Filed May 11, 1982, Ser. No. 377,089

Int. Cl.³ B21F *35/00*

U.S. Cl. 72—75 **1 Claim**



1. A method of hardening by plastic deformation surfaces of articles shaped as continuous helical coils and having essentially round cross-section by means of deforming elements comprising the steps of arranging said deforming elements at opposite sides of said article for forced rotation in engagement with the surface of the material of said article, rotating said article about its longitudinal centerline and at the same time imparting thereto ultrasonic oscillations, rotating said deforming elements in opposite directions so as to form on the surface of said article a regular microrelief in the form of intersecting mesh-like paths, and by changing the ratio between the angular rotational velocities of said deforming elements providing desired geometrical parameters of the microrelief.

4,453,393

FOUR HIGH MILL OF THE PAIRED-ROLL-CROSSING TYPE

Hiroyuki Hino; Kunio Yamamoto; Ryuichi Ozono; Hiroshi Aratani, and Susumu Kawamoto, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Aug. 13, 1981, Ser. No. 292,492

Int. Cl.³ B21B *29/00, 31/16*

U.S. Cl. 72—243 **1 Claim**

1. A four high roll mill comprising:

a pair of spaced housing frames each having at least one opening therethrough;

an upper bearing case movably mounted for vertical and horizontal movement with respect to said frames and having opposite ends extending respectively through openings of said frames;

an upper backup roll rotatably mounted to said upper bearing case;

an upper workroll chock movably mounted for vertical movement to said upper bearing case;

an upper work roll rotatably mounted to said upper chock and engageable against said upper backup roll;

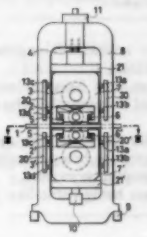
a lower bearing case movably mounted for vertical and horizontal movement with respect to said frames and having opposite ends extending respectively through openings of said frames;

a lower backup roll rotatably mounted to said lower bearing case;

a lower workroll chock movably mounted for vertical movement to said lower bearing case;

a lower workroll rotatably mounted to said lower chock and engageable with said lower backup roll;

bearing case turning means connected between said upper



and lower bearing cases and said frames for pivoting said upper and lower bearing cases in opposite directions;

workroll bending jacks connected between said upper workroll chock and said upper bearing case and between said lower workroll chock and said lower bearing case for bending said upper and lower workrolls by selected amounts;

a relatively thick plate-like beam vertically movable and horizontally fixed with respect to said housing frames and having opposite ends extending through said respective openings of said frames and fully across said respective openings, connected between each of said upper and lower bearing cases and said frames;

pressing means connected between one of said equalizing beams and said frame for moving one of said bearing cases against the other of said bearing cases; and

gap adjusting means connected between the other of said equalizer beams and said frames for adjusting a gap between said upper and lower workrolls at either end of said upper and lower workrolls.

4,453,394

SHEET METAL CLAMPING APPARATUS

Wilfried Just, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,885

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115819

Int. Cl.³ B21D *11/02*

U.S. Cl. 72—302 **7 Claims**

1. A clamping device for use in a ductile sheet metal straightening machine, comprising:

(a) a pulling head capable of moving in a sheet metal straightening direction;

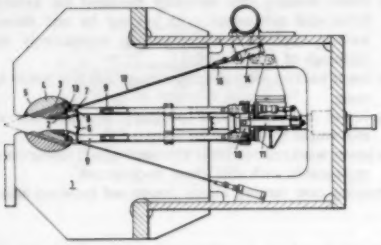
(b) said pulling head having an upper and lower clamping jaw;

(c) said clamping jaws guided by and sliding on surfaces of

said pulling head inclined with respect to said sheet metal straightening direction;

(d) a pair of compression rods which, upon longitudinal movement in a direction opposite to said sheet metal straightening direction, move said clamping jaws along said inclined surfaces from a retracted position to a sheet metal clamping position;

(e) a hydraulic drive means connected to said compression



rods for selective reciprocal longitudinal movement of said compression rods;

(f) said compression rods being selectively mechanically separable from said clamping jaws by said hydraulic drive means;

(g) pulling means for selectively retracting said clamping jaws, said pulling means being fixedly mechanically connected to said clamping jaws; and

(h) said pulling means being cable-like.

4,453,395

SHELL OF A UNIVERSAL-JOINT AND A MANUFACTURING METHOD THEREFOR

Koichi Takeda, Okazaki; Sadao Ikeda, and Koichi Matsubara, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

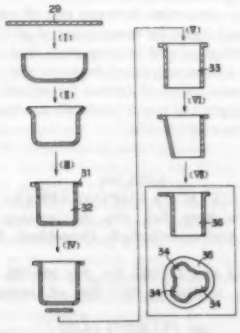
PCT No. PCT/JP81/00079, 371 Date Jan. 15, 1982, 102(e) Date Jan. 15, 1982, PCT Pub. No. WO81/03294, PCT Pub. Date Nov. 26, 1981

PCT Filed Apr. 7, 1981, Ser. No. 342,010

Claims priority, application Japan, May 24, 1980, 55-69499

Int. Cl.³ B21D *51/16*

U.S. Cl. 72—370 **13 Claims**



1. A method of manufacturing a flanged shell of hollow cylindrical shape for a universal joint comprising:

selecting a tubular blank having internal and external surfaces and an axis extending between first and second ends thereof;

working said tubular blank to form an intermediate article configuration having a plurality of protrusions extending axially of the blank and spaced circumferentially about the blank, said article being formed to have a flange at said first end extending radially outward from the axis of said blank and said protrusions being formed to slope inwardly toward said axis along the length of said blank from said first end to said second end, said protrusions defining a corresponding plurality of grooves on the internal surface of said tubular blank;

subjecting said intermediate article to an ironing process applied to the external surface of the article to compress the sloped protrusions to form a plurality of protrusions which extend generally parallel to said axis and define an equal number of said grooves parallel to said axis.

4,453,396

HEMMING APPARATUS

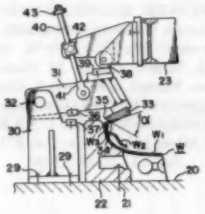
Suehiro Takatsu, c/o Kabushiki Kaisha Takatsu Seisakusho, 22, 3-chome, Nanabancho, Minato-ku, Nagoya-shi, Aichi-ken, Japan

Continuation of Ser. No. 157,092, Jun. 6, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 418,260

Claims priority, application Japan, Jul. 13, 1979, 54-89137

Int. Cl.³ B21D *5/01, 5/16*

U.S. Cl. 72—387 **7 Claims**



1. A hemming apparatus for bending the peripheral edge of an outer plate around an edge portion of an inner plate, comprising: a body; a bottom form fixed to said body; a top-form ram so mounted above said bottom form as to be vertically movable along an axis against said bottom form, said top form ram having an outer periphery lying in a plane extending perpendicular to said axis; an entirely stationary bracket planted upright on the body at the side of the bottom form; a yoke positioned to extend from the bracket ranging above a position where the outer plate sitting on the bottom form is bent, rotatably pivoted to the bracket around a support point positioned higher than the position where the outer plate is bent and pressable by said top-form ram, said support point being laterally spaced outwardly from the outer periphery of said top form ram; a bending blade fixed to a tip end of the yoke and integrally formed with a preliminary bending blade surface for preliminarily bending the outer plate and a primary bending blade surface for bending the preliminarily bent outer plate to a finished state in which said outer plate has been bent such that the peripheral edge of said outer plate pinches said inner plate against and is substantially parallel to an adjacent portion of said outer plate supported against said bottom form, said primary bending blade surface being directed to the inside of its rotational arc and substantially parallel to the surface of an adjacent portion of the bottom form when in a final bending position; said bottom form being located between said bracket and the primary bending blade surface in its final bending position; said preliminary bending blade surface being at an acute angle to an adjacent portion of the bottom form when in said final bending position; said preliminary bending blade and primary bending blade surfaces meeting each other at an obtuse angle; a pressure roller rotatably mounted on the top-form ram to press the yoke and naturally absorb the sliding movement accompanying pressing actuation conducted between contacting surfaces of the rotating yoke and the vertical mov-

ing top-form ram; and a rod connecting the yoke and the top-form ram for lifting up the yoke.

4,453,397

GAS DETECTING SENSOR

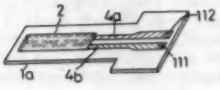
Minoru Ohta; Yutaka Hattori, both of Okazaki; Tomio Kawakami, Nishio, and Michitoshi Onoda, Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 4, 1982, Ser. No. 354,794

Claims priority, application Japan, Aug. 17, 1981, 56-128629; Aug. 18, 1981, 56-129176; Nov. 30, 1981, 56-192477

Int. Cl.³ G01N *27/12*

U.S. Cl. 73—23 **8 Claims**



1. A gas detecting sensor for detecting the partial pressure of oxygen gas contained within exhaust gases discharged from an engine, comprising:

a base member formed of ceramic material, which is mounted to an exhaust passage of said engine so as to be exposed to the exhaust gases, said base member being composed of a first and a second ceramic plates which are integrally combined by sintering;

a film shaped first sensing element formed of ceramic material having an electrical characteristic in response to the partial pressure of oxygen gas, which is printed on the upper surface of said first ceramic plate;

a film shaped second sensing element formed of ceramic material having a temperature coefficient of resistance similar to that of said first sensing element, which is printed on the upper surface of said second ceramic plate and which is to be combined with the under surface of said first plate; and

an electric circuit wherein said first and second sensing elements are connected to an electric power source in series, output voltage being taken from an electric junction between said first and second sensing elements.

4,453,398

ICE POROSIMETER

Turgut Demirel, Ames, Iowa, and Bekir V. Enüstün, Istanbul, Turkey, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 15, 1982, Ser. No. 450,074

Int. Cl.³ G01N *15/08*

U.S. Cl. 73—38 **13 Claims**

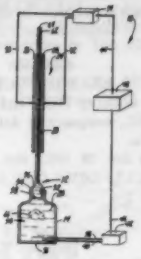
1. An ice porosimeter for deriving measurement concerning porosity of a water-saturated porous material by varying the temperature of the contents of said porosimeter comprising:

(a) a mercury dilatometer having a mercury-holding reservoir and a capillary stem in fluid communication with and extending upwardly from said reservoir, said reservoir being adapted to hold said porous material;

(b) a means for measuring instantaneous temperature values for the contents of said reservoir;

(c) condenser means operatively positioned around said capillary stem and connected to an electronic circuit for creating an electrical capacitance and continuously measuring the capacitance across said capillary stem; and

(d) means for deriving the volume of the pores, pore size distribution, total specific pore surface, and size of pore constrictions of said porous material from the measurements from said condenser means as a function of the



corresponding measurements from said means for measuring instantaneous temperature values.

4,453,399

LEAK DETECTOR

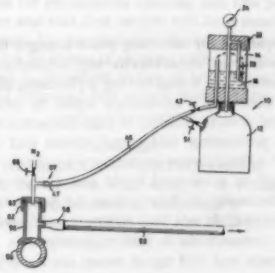
Clifford F. Thompson, Weston, Canada, assignor to Cliffside Pipelayers, A Division of Banister Continental Ltd., Scarborough, Canada

Filed Mar. 10, 1982, Ser. No. 356,936

Claims priority, application Canada, Feb. 1, 1982, 395275

Int. Cl.³ G01M *3/06*

U.S. Cl. 73—40.5 R **1 Claim**



1. A method of detecting leakage in a pressurized system, utilizing a leak detecting apparatus which includes a pressure vessel of fixed volume for holding gas under pressure, a transparent chamber mounted to the vessel partly filled with liquid, means defining a gas pathway from the vessel to a location within the chamber which is beneath an upper surface of the liquid, a fitting for conncetion to a system which is to be tested for leakage under pressurized gas, and conduit means different from said gas pathway connecting the fitting through a first valve to a location within the chamber above the upper surface of the liquid and through a second valve with the interior of the vessel;

the method including the steps:

connecting the fitting to the system which is to be tested for leakage under pressurized gas,

closing said first valve,

pressurizing the system with gas to fill the conduit means and allowing gas entering the conduit means to pass through the second valve into the interior of the vessel, thereby equalizing the pressure between the vessel and the system,

closing the second valve, and thereby isolating the vessel from the system,

allowing time to pass so that any leakage in the system will lower the pressure vis-a-vis the pressure in the vessel, then

opening said first valve and determining whether gas passes from the vessel into the conduit by observing whether bubbled gas escapes from said location within the chamber which is beneath the upper surface of the liquid.

4,453,400

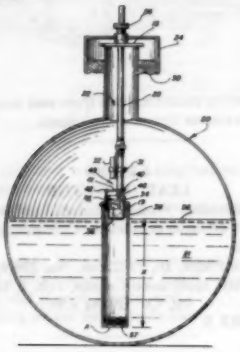
LEAK DETECTOR

Frank J. Senese, Hickory Hills, and Lloyd A. Baillie, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jan. 18, 1982, Ser. No. 340,439

Int. Cl.³ G01M *3/38*; G01F *23/10*

U.S. Cl. 73—49.2 **5 Claims**



1. An apparatus for detecting small changes in the location of a float means, said apparatus having, in combination, a signal means for emitting a signal having a characteristic, a detector means for detecting a modulated signal by producing a response signal directly related to said characteristic, a support means for positioning said signal means and said detector means, and a float means including a means for floating at a desired depth in a selected liquid and a reservoir means for holding a measuring medium, means for preventing condensation of vapors within said float means, wherein said float means is movably connectable to said support means, wherein said detector means and said signal means are fixedly connectable to said support means so that said signal when emitted by said signal means will have said characteristic of said signal modulated by said measuring medium by an amount which varies with changes in location of said float means to produce a modulated signal, and wherein said detector means is oriented to detect said modulated signal.

4,453,401

PRESSURE SENSOR AND SOIL STRESS ISOLATION FILTER ARRANGEMENT IN A PORE PRESSURE PROBE

Roger Sidey, Richmond, England, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1982, Ser. No. 357,439

Int. Cl.³ G01L *11/00*; G01N *33/24*

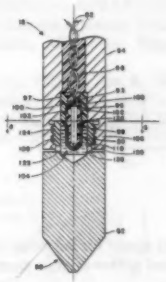
U.S. Cl. 73—73 **5 Claims**

1. In a system for measuring transient pore water pressure in the ground, a probe member comprising:

(a) a body portion having a hollow cavity defined therein and including an inner tip section and an outer tip section, said inner tip section having a lower hollow end, said outer tip section having an upper hollow end and adapted to be connected to said inner tip section at its lower hollow end such that said hollow cavity is formed between said inner and outer tip sections at the connection of said sections to one another;

(b) a pressure sensor mounted in said cavity;

(c) said inner and outer tip sections of said body portion having adjacent generally planar parallel spaced surfaces which define a filter in the form of a narrow circumferential gap disposed on said body portion at said connection of said inner and outer tip sections and open to the exterior of said body portion circumferentially thereabout, said circumferential gap defined between said parallel spaced surfaces of said inner and outer tip sections of said body portion being formed by bottoming-out of a recessed shoulder of said upper hollow end of said outer tip section



on a flat annular inner surface of said lower hollow end of said inner tip section, said outer tip section further having a plurality of radially-extending holes defined therein in alignment with said circumferential gap and open to both said gap and said cavity for providing communication of pore water located about the exterior of said body portion with said cavity therein via said circumferential gap and said radially-extending holes while isolating said cavity and said sensor mounted therein from effective soil fabric stresses; and

(d) a coupling medium disposed in said cavity between said sensor and said filter for transmitting pressure produced by said pore water to said sensor.

4,453,402

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A PISTON IN THE CYLINDER OF A RECIPROCATING ENGINE

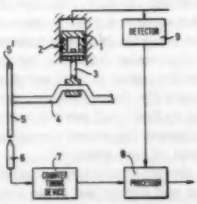
David Grant, Langdale, Moor La., South Newington, Nr. Banbury, Oxon, England

Filed Apr. 12, 1982, Ser. No. 367,599

Claims priority, application United Kingdom, Mar. 10, 1982, 8207012

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117.2 **10 Claims**



1. A method of determining the top dead center position of a piston in the cylinder of a reciprocating engine comprising

allowing the engine to decelerate to rest in a non-firing mode of the engine, measuring the speed of the engine during deceleration, and determining the speed minimum in a final reciprocating movement of the piston before the engine comes to rest, said speed minimum corresponding to the top dead center position of the piston in the cylinder.

4,453,403

VOLUMETRIC METERING EQUIPMENT

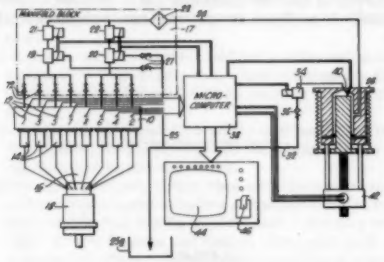
Stephen Bussey, Buckingham; Barry Cockburn, Gawcott, and Alastair E. F. Heath, Dunton, all of England, assignors to Leslie Hartridge, Ltd., Buckingham, England

Filed Aug. 31, 1982, Ser. No. 414,500

Claims priority, application United Kingdom, Sep. 3, 1981, 8126757

Int. Cl.³ G01F 3/14

U.S. Cl. 73—119 A 15 Claims



1. Volumetric metering equipment comprising:

(a) mounting means by which an injector of a fuel injection system can be mounted on said equipment;

(b) a measuring device which is constructed to receive test fluid and to provide a signal indicative of the volume of test fluid received by said device;

(c) at least one passageway extending from said mounting means to said measuring device to allow test fluid to pass from such an injector to said measuring device when said equipment is in use;

(d) wall means of said measuring device defining a chamber into which opens said at least one passageway, the chamber being capable of containing a volume of test fluid which is the sum of the volumes of many injections through such an injector;

(e) transducer means of the measuring device attached to said wall means to provide an electrical signal which is indicative of the amount of test fluid at each and every stage of that amount increasing to said volume;

(f) detection means arranged to detect a given point in an injection cycle of such a fuel injection system as said amount increases to said volume; and

(g) individual injection volume determining means connected to said detection means and to said transducer means to record the values of said electrical signal at the successive instants corresponding to said given point as said amount increases to said volume, and from these values to determine the volumes of each of a succession of individual injections through such an injector.

4,453,404

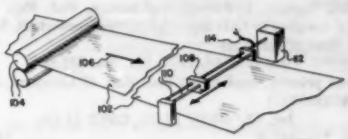
METHOD AND APPARATUS FOR DETERMINING STATISTICAL CHARACTERISTICS OF SHEET MATERIAL

Calvin J. Powell, Miamisburg, and Robert R. Rounsley, Chillicothe, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 22, 1982, Ser. No. 443,351

Int. Cl.³ G06G 7/66, 7/12

U.S. Cl. 73—159 20 Claims



7. Apparatus for determining statistical characteristics of a measurable property, comprising:

gauge means for monitoring the property of said sheet material and for generating an electrical signal representative of variations in said property;

high pass filter means, connected to said gauge means, for receiving said electrical signal and eliminating low frequency noise therefrom;

first peak detection means, connected to said high pass filter means, for determining the maximum value of the filtered electrical signal;

first sample and hold means for reading said peak detection means;

timing means for periodically clearing said first peak detection means and said first sample and hold means; and

analyzer means for generating statistical characteristics of the property by means of extreme value statistical analysis in response to maximum values of said filtered electrical signal read from said first sample and hold means.

4,453,405

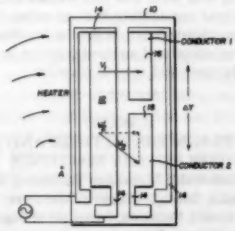
PYROELECTRIC VORTICIMETER

Jay N. Zemel, Jenkintown, Pa., assignor to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed May 24, 1982, Ser. No. 381,344

Int. Cl.³ G01F 1/68

U.S. Cl. 73—204 9 Claims



1. A pyroelectric shear meter for providing an indication of shear flow in a given direction existent in a general flow fluid, said shear meter comprising:

a pyroelectric substrate having at least one surface;

means for applying a fluctuating heat input to said substrate, said input causing a fluctuating surface charge distribution in response to temperature fluctuations of said substrate; and

at least two spaced-apart conductor element means for sensing a fluctuating surface charge on said at least one surface in the vicinity of each of said at least two conductor ele-

ment means, differences in said charge fluctuations between said two conductor element means comprising an indication of shear flow in the fluid, said two spaced-apart conductor element means spaced apart at least in a direction perpendicular to said given direction and at substantially the same position in said given direction.

4,453,406

DEVICE FOR THE TRANSPORT OF TEST SPECIMENS IN STRIP FORM TO A MEASURING APPARATUS

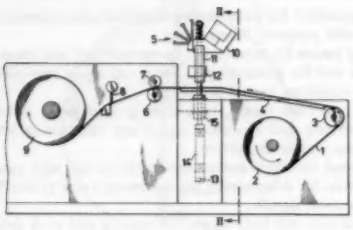
Wolfgang Spitzer, Grünberg-Stockhausen, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,544

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 8033593[U]

Int. Cl.³ G01N *33/00*; G01D *21/00*

U.S. Cl. 73—432 R **10 Claims**



1. Apparatus for the evaluation of test strips comprising a housing; a conveying web for conveying the test strips, and extending from a supply of the web to a take up therefor, the web passing a first location at which the test strips are placed onto the conveying web and a second location at which the test strips are evaluated before the web passes forward to said take up; a probe mounted on said housing at said second location for evaluating each test strip passing thereunder; barrier means for aligning each test strip with the probe; cant means for displacing the test strip into registry with the probe; and reciprocating means for raising and lowering said barrier means and said cant means with respect to said housing while said web urges said test strip forward to effect the alignment and registry of the test strip; said reciprocating means including a pair of connecting rods journalled in said housing on opposite sides of said web; and said barrier means including a bar coupled to said connecting rods to move between a lowered position separated from said belt by less than the thickness of one of said test strips and a raised position in which said test strip can pass beyond said second location.

4,453,407

VIBRATION DIAGNOSIS METHOD AND APPARATUS FOR ROTARY MACHINES

Kazuo Sato, Kitaibaraki; Masakazu Takasumi; Kouki Shiohata, both of Ibaraki; Motoji Ohmori; Motohiro Shiga, both of Hitachi, and Fumio Fujisawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

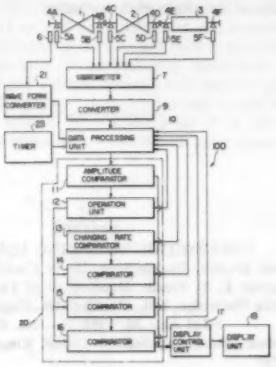
Filed Apr. 17, 1981, Ser. No. 255,105

Claims priority, application Japan, Apr. 17, 1980, 55-49601; Sep. 1, 1980, 55-119713

Int. Cl.³ G01M *1/22*

U.S. Cl. 73—462 **19 Claims**

1. A vibration diagnosis method for rotary machines comprising the steps of measuring vibration of the rotor shaft of a rotary machine; extracting from the measured overall vibration the vibration component synchronous with the revolution of said rotor shaft; comparing the amplitude of the vibration with the amplitude of the overall vibration; analyzing said synchronous vibration; judging the result of the analysis of the synchronous vibration component; and displaying the result of the judgement in a diagrammatical manner; said step of analyzing the synchronous vibration component including comparing the rate of change of said vibration component with a first



value, and comparing the rates of change of amplitude of the vibration component at two adjacent points of time, while said step of judging includes a judgement as to whether a vibration attributable to an abrupt generation of mass unbalance is taking place.

4,453,408

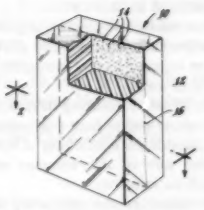
DEVICE FOR TESTING ULTRASONIC BEAM PROFILES

William Clayman, 50 Ledgewood Dr., Norwalk, Conn. 06850

Filed Mar. 9, 1981, Ser. No. 241,488

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—1 DV **12 Claims**



1. A device for testing an ultrasonic beam comprising:

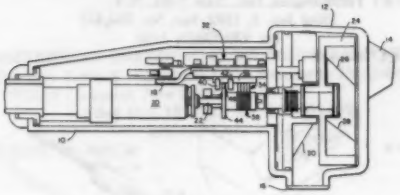
a block of solid material permitting propagation of said beam therethrough without substantial scattering; and

a plurality of discrete particles having surfaces interfacing with said material for reflecting said beam, said particles being located in and being generally uniformly distributed along a plane in said block, said plane of particles being surrounded wholly on both sides thereof by said solid material whereby a beam pattern can be tested as it is reflected from said means for reflecting but propagates through said solid material on both sides of said plane without substantial scattering.

4,453,409
ULTRASONIC SECTOR SCANNER UTILIZING ROTATING TRANSDUCER

Ted F. Naumann, Jr., Shingle Springs, and Ronald C. Carnes, Folsom, both of Calif., assignors to General Electric Company, Rancho Cordova, Calif.

Filed Aug. 7, 1981, Ser. No. 290,838
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—639 **3 Claims**



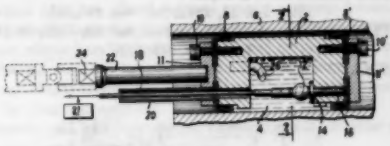
1. A hand-held ultrasonic sector scanner comprising
a housing having a handle portion and a separated end portion,
a hollow shaft rotatably mounted in said handle portion and said end portion of said housing,
a motor mounted within said handle portion of said housing axially aligned with said shaft and coupled to rotate said shaft,
a transducer support wheel in said end portion and including a plurality of transducers, said wheel being axially aligned with and coupled to said shaft for rotating said plurality of transducers,
electronic circuitry mounted within said handle portion of said housing for controlling said transducers and processing electrical signals therefrom,
means for electrically conducting said electronic circuitry and said transducers including a bushing mounted on said shaft within said handle portion and a plurality of slip-rings on said bushing and spaced along said shaft and a plurality of brushes engaging said plurality of slip-rings, each slip-ring being continuous, first conductive means electrically interconnecting said brushes and said electronic circuitry and second conductive means extending through said hollow shaft and electrically interconnecting said slip-rings and said transducers,
a brush support block mounted to said housing in association with said slip-rings, and
optical indexing means within said handle portion and including an optical emitter and an optical detector mounted in spaced alignment in said brush support assembly, a disc integral with said bushing mounted on said shaft, said disc having a notch in a peripheral portion, said disc passing between said optical emitter and said optical detector whereby an index signal is generated by said optical detector in response to light passing through said notch.

4,453,410
METHOD AND APPARATUS FOR LOCATING MATERIAL DEFECTS IN HOLLOW BODIES

Hans-Peter Schmitz, and Bernard Schleper, both of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 228,864, Jan. 27, 1981, abandoned. This application Jun. 14, 1983, Ser. No. 503,642
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003349
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—640 **11 Claims**

1. The method of detecting defects in the material of hollow bodies which includes the steps of generating, transmitting and receiving ultrasonic waves within the hollow body from and to a point eccentrically positioned within the hollow body with the path of said waves extending directly and unimpededly between said point and said hollow body at right angles to but not radially from the longitudinal axis of said hollow body, the distance along said path corresponding to the focusing of the transmitted ultrasonic waves in accordance with the dimen-

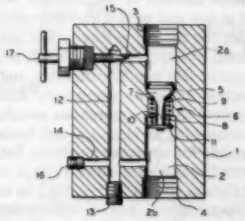


sions of the hollow body to be tested, rotating said path concentrically about an axis parallel to the longitudinal axis of the hollow body and transferring the waves reflected and received from said hollow body into detectable signals indicative of the presence or absence of defects in the material of the hollow body.

4,453,411
PRESSURE MEMORY DEVICE

Satoru Shikasho, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 21, 1982, Ser. No. 380,688
Int. Cl.³ G01L *7/00*
U.S. Cl. 73—709 **4 Claims**



1. A pressure memory device for use with a pressure gauge to measure an extreme in pressure occurring in a fluid system, said device comprising:
a body member having a through bore, said body member being adapted at one end of said through bore for connecting to a pressure gauge, said body member being adapted at another end for connecting to a fluid system;
a check valve disposed within said bore, said check valve dividing said through bore into first and second chambers;
said check valve being responsive to a positive pressure differential between said first and second chambers to establish fluid communication between said first and second chambers, said check valve being responsive to substantially zero or negative pressure differentials between said first and second chambers for closing to prevent fluid communication therebetween;
a passage for providing fluid communication between said first and second chambers bypassing said check valve, said passage comprises a first blind bore parallel to said through bore a first means for sealing the open end of said first blind bore, a second bore extending through said first blind bore and having one end opening into said first chamber, a third bore extending through said first blind bore and having one end opening into said second chamber, second sealing means for sealing the other end of one of said second or third bores; and
a valve for opening and closing said passage, said valve

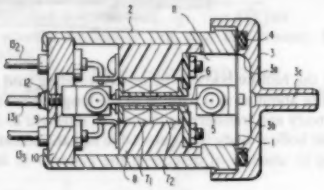
being inserted into the other end of said second or third bores.

4,453,412

PRESSURE SENSOR

Takeshi Nakane, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 12, 1982, Ser. No. 397,263
Claims priority, application Japan, Jul. 20, 1981, 56-113216
Int. Cl.³ G01L *9/10*
U.S. Cl. 73—728 **2 Claims**



1. A pressure sensor, comprising:

a casing;

a movable member disposed in said casing to divide said casing into a first space and a second space, one of said first and second spaces receiving a pressure to be measured and the other of said first and second spaces receiving a reference pressure;

an amorphous member of magnetically soft metal material coupled at one end to said movable member and secured at another end thereof, whereby said amorphous member is subjected to differing tensile stress in accordance with movement of said movable member; and

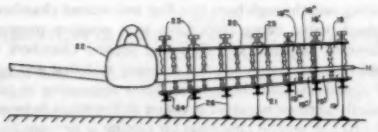
stress detection means for electrically detecting the tensile stress applied to said amorphous member said detection means comprising an electrical coil having two electrical coil portions for applying magnetic fields to said amorphous member in opposite directions in response to signals applied thereto, means for applying an intermittent signal to said electrical coil, and impedance detection means for detecting the impedance of said coil.

4,453,413

AERODYNAMIC LOAD DISTRIBUTION SIMULATOR

Robert L. Schneider, 15 W. Whittier Ave., Fairborn, Ohio 45324

Filed Jul. 14, 1982, Ser. No. 398,130
Int. Cl.³ G01M *5/00*
U.S. Cl. 73—802 **28 Claims**



1. An apparatus for simulating the aerodynamic load distribution over the surfaces of an airfoil, comprising:

a. upper and lower backing platens supported in a substantially parallel spaced relationship with said airfoil juxtaposed therebetween;

b. means defining a first array of a plurality of individual longitudinally expansible volume elements disposed between confronting surfaces of said upper platen and said airfoil;

c. means defining a second array of a plurality of individual longitudinally expansible volume elements disposed between confronting surfaces of said lower platen and said airfoil; and

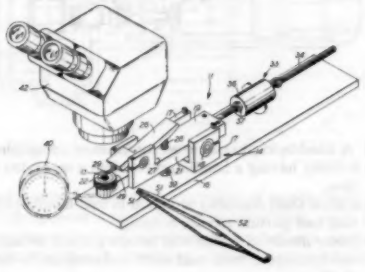
d. means for controlling the pressure within each said expansible volume element.

4,453,414

PULL TESTING ELECTRICAL DEVICE LEADS

James R. Ronemus, Lehighton; Lowell Sentman, Catasauqua, and William R. Wanesky, Wescosville, all of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 3, 1982, Ser. No. 384,446
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—827 **12 Claims**



1. A method of testing the bond strength of a conductive lead bonded to an electrical device, comprising:

mounting the device to a pedestal coupled to a load sensor;

grasping a lead between jaws of a freely manipulatable grasping tool;

manipulating the tool including the lead in a direction away from the device, and transmitting a force from the tool through the lead and the device, and through the pedestal to the load sensor; and

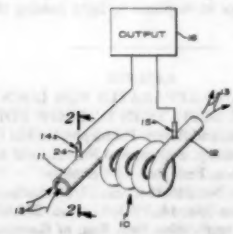
observing an indication on the load sensor to determine if the force exceeds a predetermined minimum pull strength required on a bonded interface between the lead being pulled and the device to determine whether the lead has withstood such predetermined minumum pulling force.

4,453,415

FLOW MEASURING DEVICE FOR FLUID CONVEYING SYSTEMS

William R. Carter, Rte. 6, Box 115, Brainerd, Minn. 56401

Filed Jan. 8, 1982, Ser. No. 338,031
Int. Cl.³ G01F *1/74*
U.S. Cl. 73—861.04 **18 Claims**



1. A system for measuring the quantity of particulate material carried by a fluid flow which comprises:

(a) means for receiving said fluid flow and including means constructed and arranged for conducting said fluid flow

from an inlet through an outlet along a generally helical path such that the pressure drop across said conducting means is increased due to the change in the direction of flow;

(b) means for sensing the pressure drop of said fluid flow, said means including pressure tap means, said pressure tap means consisting of two pressure taps incorporated within and separated by at least a portion of said generally helical path; and

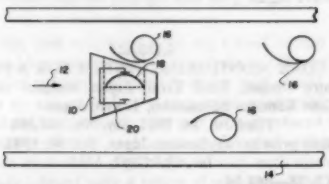
(c) means for relating said pressure drop to the quantity of particulate material within said fluid flow.

4,453,416

VORTEX SHEDDING FLOW MEASUREMENT

Knudsen, James K., Cleveland, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 15, 1981, Ser. No. 331,057
Int. Cl.³ G01F 1/32
U.S. Cl. 73—861.24 **4 Claims**



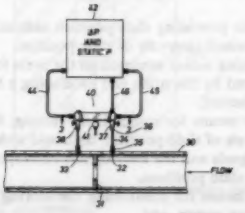
1. In a vortex shedding flowmeter, of the type having a bluff body mounted in a flowstream, an improved sensor comprising a bistable element connected to the bluff body, means for constraining said element for displacement within a transition region responsive to vortex shedding of flow about the bluff body, and means for measuring the displacement of said element.

4,453,417

UNITIZED MEASUREMENT INSTRUMENT CONNECTOR APPARATUS

Michael E. Moyers, Rosharon, and Edsel O. Ross, Stafford, both of Tex., assignors to Anderson, Greenwood & Company, Bellaire, Tex.

Filed Mar. 8, 1982, Ser. No. 355,857
Int. Cl.³ G01F 1/36
U.S. Cl. 73—861.42 **2 Claims**



1. For use with a pipeline flowing a fluid therethrough and wherein a pressure differential in the pipeline is created across a differential pressure producing restriction within the pipeline, unitized connector apparatus for connecting measuring instrumentation with the pipeline, the connector apparatus comprising an elongate unitized body having two remote ends and a lengthwise passage between the two ends, said body also being adapted to thread and support serially with said passage first and second spaced valve assemblies for selectively opening and closing for selective valving action of fluid flow along said passage, and wherein said passage terminates at multiple tapped openings on said body at each end to enable connections to be made with said body on installation between openings in a pipeline and the measuring instrumentation for providing two fluid pressure signals from the pipeline through said apparatus to the measuring instrumentation connected thereto, and said body is elongate bar stock having a cross-section and said passage is axially positioned along the length thereof;

said bar stock has a pair of opposing parallel side faces perforated with two of said multiple tapped openings formed as opposing tapped openings and the two tapped openings are aligned on opposite faces of said body and are connected directly therethrough to enable rodding through one of said tapped openings and out the opposing opening for cleaning purposes;

wherein said body is roddable through said lengthwise passage from one end thereof; and

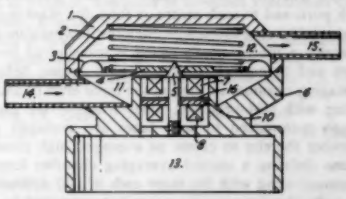
one of said multiple tapped openings is aligned with said passage to enable a rod to be inserted through said passage at said tapped opening through the full length of said body and out the corresponding multiple tapped opening on the opposite end thereof.

4,453,418

FLOW-METER FOR FLUIDS, WITH CONSTANT PRESSURE LOSS

Alain Rousseau, Paris, and Francois Ramel, Levallois-Perret, both of France, assignors to EFFA Etudes, Societe a Responsabilité Limiteé , Paris, France

Filed Mar. 1, 1982, Ser. No. 353,714
Claims priority, application France, Mar. 12, 1981, 81 04961
Int. Cl.³ G01F 1/22
U.S. Cl. 73—861.58 **7 Claims**



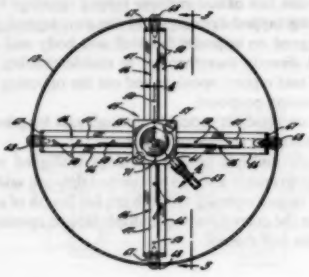
7. A flow-meter having a pressure loss substantially independent of flow rate of a fluid, comprising a hermetic enclosure having first and second chambers, an entry orifice formed in the first chamber for receiving fluid, the flow rate of which is to be measured, an exit orifice formed in the second chamber for passage of the measured fluid, a movable element separating said chambers, said movable element permitting the monitoring of the fluid flow by linear displacement thereof and comprising a circular, flat rigid dome pierced with a central hole and connected to the body of the enclosure via a flexible seal, a cone having an apex of at least 45° and held within the enclosure body, the axis of said cone being perpendicular to the plane of the dome and passing through the center of said dome, means for exerting an almost constant force upon the dome to apply the edge of the hole of the dome to the cone and permitting the displacement of the dome in the direction of the axis of the cone, and contactless nondisplaceable transducer means for converting the said displacement of said dome away from said cone into a signal representing the flow rate, the transducer means including an eddy-current transducer element.

4,453,419

DEVICE FOR SENSING THE VOLMETRIC FLOW RATE OF AIR IN A DUCT

Roger P. Engelke, Roscoe, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Nov. 26, 1982, Ser. No. 444,788
Int. Cl.³ G01F 1/46
U.S. Cl. 73—861.66 11 Claims



1. A sensor for producing a differential pressure signal which varies as a function of the volumetric flow rate of air through a duct system having interconnected upstream and downstream duct sections extending at an angle to one another whereby air flows into the upstream end portion of the downstream duct section in an asymmetrical pattern, said sensor being located in the upstream end portion of said downstream duct section and comprising an array of at least three angularly spaced and radially extending arms, each of said arms comprising an upstream sensing tube and further comprising a downstream sensing tube alined angularly with and extending parallel to said upstream sensing tube, a series of ports spaced axially along and formed through each sensing tube, the ports in each upstream sensing tube being formed through the upstream side thereof whereby a high pressure signal is transmitted through such ports and to each upstream tube, the ports in each downstream tube being formed through the downstream side thereof whereby a low pressure signal is transmitted through such ports and to each downstream tube, means defining a first averaging chamber located at the inner ends of and communicating with said upstream tubes whereby the high pressure signals transmitted to such tubes are averaged within said chamber thereby to create an averaged high pressure signal, means defining a second averaging chamber located at and communicating with the inner ends of said downstream tubes whereby the low pressure signals transmitted to the downstream tubes are averaged within said second chamber thereby to create an averaged low pressure signal, and means for conducting the averaged high and low pressure signals from said first and second averaging chambers, respectively.

4,453,420

TORQUE SENSOR ASSEMBLY

Takeshi Nakane, Okazaki, and Kaneo Mohri, Fukuoka, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

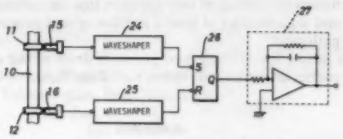
Filed Apr. 1, 1982, Ser. No. 364,236
Claims priority, application Japan, Apr. 14, 1981, 56-055807
Int. Cl.³ G01L 3/10
U.S. Cl. 73—862.34 5 Claims

1. A torque sensor for detecting the rotational torque transmitted by a shaft, comprising:

at least a pair of permanent magnets axially spaced at a predetermined distance and integrally fixed to said shaft;

a pair of pickup coils arranged in magnetic coupling relationship with each of said permanent magnets and adapted to detect a phase difference occurring between output signals of said pickup coils as a measurement for a transmitted torque, each of said pickup coils having a core formed by a short piece of Wiegand wire;

a pair of waveshapers arranged to reshape positive pulses respectively occurring in said pickup coils to corresponding rectangular wave signals;



a flip-flop circuit having applied thereto the rectangular wave signals as set and reset signals to produce an output rectangular wave signal defined by the leading edges of the rectangular wave signals from said waveshapers; and

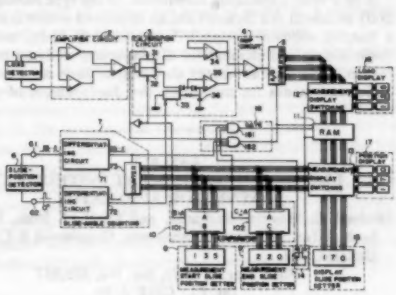
an integration circuit to detect the transmitted torque in dependence upon the width of the output rectangular wave signal from said flip-flop circuit.

4,453,421

LOAD MONITORING SYSTEM FOR A PRESS

Yasuhiro Umano, Terai Terai, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,390
Claims priority, application Japan, Jul. 30, 1981, 56-118536
Int. Cl.³ G01L 1/16
U.S. Cl. 73—862.54 5 Claims



1. A load monitoring system for a press having a slide, comprising:

means for providing slide position indicating signals at predetermined intervals of slide position,

load sensing means mounted on the press for detecting a load incurred by the press and producing a load signal indicative thereof,

memory means for respectively storing, for predetermined intervals of slide position, both said slide position indicating signals and the load signals corresponding to the indicated slide positions,

control means for controlling the storing operation of said memory means, and

display means for displaying both slide position and the corresponding load as read from said memory means.

4,453,422

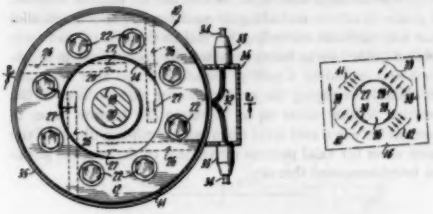
STRAIN GAGE LOAD CELL HAVING IMPROVED SENSITIVITY

Alexander Yorgiadis, 1404 Garza St., Anaheim, Calif. 92804

Filed Jan. 22, 1982, Ser. No. 341,596
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.66 4 Claims

1. A strain gage load cell comprising a body of material,

means for applying a load to said body to subject the body to shear stress, said body having at least two openings therein and positioned relative thereto to cause at least a portion of each opening to be distorted to form an ovular configuration when said load is applied to said body, and at least one strain gage disposed within said portion of each opening to sense circumferential strain, said body of material being of circular configuration having appreciable thickness and having a circular area of reduced thickness disposed between a central hub and a



peripheral rim, said means for applying a load to said body displacing said hub axially relative to said rim and thus subjecting said area of reduced thickness to shear, each of said openings having an axis extending in tangential relationship to a hypothetical circle concentric with said area of reduced thickness and said portion of each opening disposed within said area, wherein each strain gage disposed with each opening is approximately aligned with a radius of said body, and is disposed at an angle within its associated opening of approximately 45° relative to the axis of said hub.

4,453,423

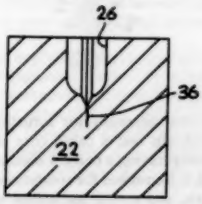
METHOD AND APPARATUS FOR GENERATING A NATURAL CRACK

Fred J. Fulton, Livermore; Charles A. Honodel, Tracy; William R. Holman, Danville, and Richard C. Weingart, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,645

Int. Cl.³ G01N *1/28*

U.S. Cl. 73—863 **16 Claims**



12. An apparatus for generating a measurable natural crack in a solid material, comprising:

means for forming a primary notch in a surface of said solid material; and

means for generating a non-sustained single pressure pulse in the vicinity of said primary notch, said means for generating comprising:

an electrically conductive ribbon of material,

two electrodes, each disposed at opposing ends of the electrically conductive material,

a power source, and

means for operatively connecting said power source to said electrodes.

4,453,424

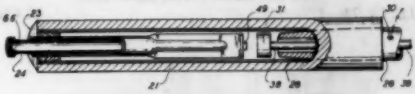
MOLTEN METAL SAMPLER

Robert J. Hackett, Brookfield, Conn., assignor to Haly, Inc., Brookfield, Conn.

Continuation-in-part of Ser. No. 258,873, Apr. 29, 1981, abandoned. This application Nov. 29, 1982, Ser. No. 445,002

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—864.58 **11 Claims**



1. A molten metal sampler assembly comprising an elongated, open-ended heat-insulated lance tube,

a hollow cylindrical heat-resistant chill mold tube sampler secured in slidably removable engagement near a first open distal end of the lance tube and having a distal entrance portal end and a proximal vent portal end,

and elongated longitudinally reciprocable ejector means telescopingly extending into the second proximal open end of the lance tube for ejection-impact contact with the sampler producing sliding disengagement and longitudinal ejection of the sampler from the first distal end of the lance tube,

whereby the chill mold tube sampler may be immersed in a body of molten metal to collect a melt sample inside the chill mold tube, and then withdrawn and aimed at a chilling fluid bath, and the ejector means may then impact the sampler to eject the sampler and the melt sample contained therein into the chilling fluid bath.

4,453,425

HOLDING MECHANISM

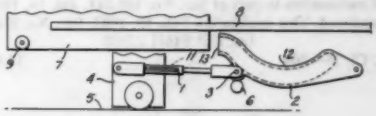
William G. Wayman, New Barnet, and Harald Engelbert, London, both of England, assignors to Crosfield Electronics Limited, London, England

Continuation of Ser. No. 129,954, Mar. 13, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,196

Claims priority, application United Kingdom, Mar. 22, 1979, 7910080

Int. Cl.³ G05G *17/00, 1/04;* F16H *21/44*

U.S. Cl. 74—2 **10 Claims**



1. A mechanism for moving a journal bearing support as an operating device travels past said journal bearing support, comprising:

a toggle linkage connected to said journal bearing support and having a central pivot;

a cam track connected to said central pivot;

and a projecting member attached to said device, said projecting member being positioned on said device so as to be engageable with said cam track towards an end of the pass of said device;

said cam track being curved so that further movement of said device after said projecting member has engaged said cam track causes said central pivot of said toggle linkage to move thereby releasing said central pivot so as to move said journal bearing support as said device completes its pass.

4,453,426

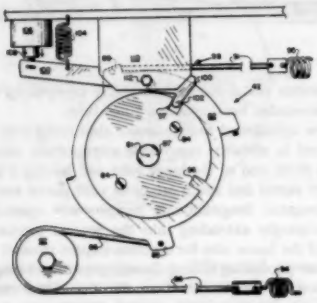
PIVOTAL MONO WING CRUISE MISSILE WITH WING DEPLOYMENT AND FASTENER MECHANISM

Frederick D. Groutage, Laramie, Wyo.; Samuel N. Conjerti, and Lockburn S. Shaw, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 182,335, Aug. 29, 1980. This application Apr. 29, 1982, Ser. No. 372,870

Int. Cl.³ G05G *17/00*; B64C *3/56*

U.S. Cl. 74—2 16 Claims



1. A device for biasing a mechanical member from a first position to a second position comprising:

an attachment bracket secured to said mechanical member and connected to a support member that is stationary with respect to said mechanical member;

a pulley connected to said support member;

a cable having a first end connected to said bracket and a second end, said cable being in slideable engagement with said pulley; and

a spring having a first end connected to said support member and a second end connected to said cable second end for biasing said mechanical member towards said second position.

4,453,427

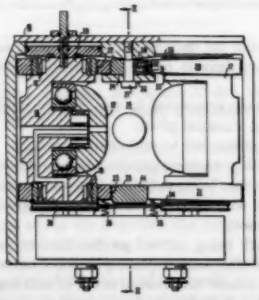
INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, and Paul L. Horton, both of Austin, Tex., assignors to Excelermatic Inc., Austin, Tex.

Continuation-in-part of Ser. No. 168,521, Jul. 14, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,187

Int. Cl.³ F16H *15/08*

U.S. Cl. 74—200 13 Claims



1. A traction roller transmission comprising: a housing; coaxial input and output toric elements rotatably supported in said housing and being arranged opposite each other such that a toric cavity is formed therebetween; motion transmitting traction rollers disposed in said toric cavity in radial symmetry with respect to the axis of said input and output toric elements and in engagement with said opposite toric elements for the transmission of motion therebetween; a support structure for each said motion transmitting traction roller; and tension sheets extending between and interconnecting said support structures for balancing forces applied to said traction rollers, said tension sheets each having a center portion and a guide structure associated therewith in the center portion thereof, said guide structure including on said tension sheets, parallel planar side surfaces extending normal to the axis of said toric discs and guide blocks being substantially rectangular in cross-section and including a pair of slightly curved side wall surfaces slidably engaging the parallel planar side surfaces of the respective tension sheet so as to retain the tension sheet in alignment between said toric discs but permitting tilting of the tension sheet for axial precess movement of the support structures interconnected thereby.

4,453,428

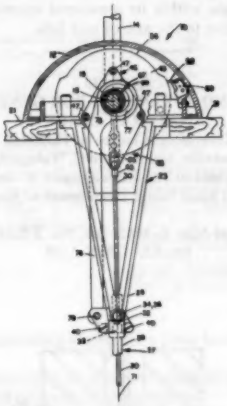
SELF-ALIGNING SWIVEL ASSEMBLY FOR PUSH-PULL CABLE CONTROL LEVER ASSEMBLY

Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada V6M 2W2

Filed May 6, 1981, Ser. No. 261,048

Int. Cl.³ F16C *1/10*; G05G *1/00, 3/00*

U.S. Cl. 74—501 R 10 Claims



1. A control lever assembly for actuating a control cable having a cable sheath and a cable core slidable within the sheath, the assembly having a body, a manualy actuated operator's lever which is journalled for rotation relative to the body about a lever axis, and a core anchoring means cooperating with the lever to rotate therewith relative to the body so that the core anchoring means is subjected to relative displacement during such rotation, the core anchoring means also being adapted to anchor one end of the core of the control cable, the assembly being further characterized by:

(a) a sheath retainer member journalled for rotation relative to the body about a retainer axis, the retainer member cooperating with the sheath to retain a portion of the sheath to essentially prevent axial movement of the sheath along the core of the cable and relative to the body following actuation of cable,

(b) connecting means, structurally independent of the control cable, cooperating with the sheath retainer member and the core anchoring means to swivel the sheatn re-

tainer member about the retainer axis in response to rotation of the core anchoring means,

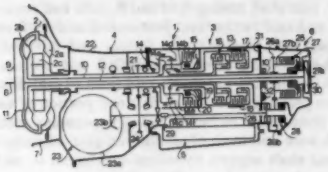
so that the sheath retainer member swivels about the retainer axis to accomodate the relative displacement of the core anchoring means to maintain approximate alignment of the sheath with the core.

4,453,429

AUTOMATIC TRANSMISSION WITH OVERDRIVE DEVICE

Takano Toshio, Hamuramachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 297,888
Claims priority, application Japan, Sep. 9, 1980, 55-125435
Int. Cl.³ F16H *47/08*
U.S. Cl. 74—688 **15 Claims**



1. An automatic transmission comprising

a torque converter comprising a converter cover and an impeller connected to the crankshaft of an internal combustion engine and a turbine driven by said impeller through oil,

an automatic transmission apparatus comprising a planetary gear device and fluid operated brake and clutch devices operatively connected to an output shaft of said turbine,

an oil pump drive shaft operatively connected to said converter cover and axially extending through said automatic transmission apparatus,

means comprising an oil pump driven by said oil pump drive shaft for producing pressure oil to be applied to the fluid operated brake and clutch devices,

a final reduction gear device connected to an output shaft of said automatic transmission appratus,

an overdrive device comprising an overdrive clutch and overdrive gears, said overdrive clutch being connected between said output shaft of said turbine and said overdrive gears,

an intermediate shaft connected between an output shaft of said overdrive gears and said final reduction gear device, and

valve means for applying the pressure oil to said overdrive clutch for engagement thereof for overdriving and substantially simultaneously via one of said clutch devices for operatively disconnecting said output shaft of said turbine from said final reduction gear device via said automatic transmission apparatus and said planetary gear device.

4,453,430

MULTIPLE-SPEED WINCH OR DRUM DRIVE

Leslie J. Sell, Langley, Canada, assignor to Paccar of Canada Ltd., Quebec, Canada

Filed Oct. 14, 1980, Ser. No. 196,687
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—770 **5 Claims**

1. A multiple-speed transmission for winches, hoisting drums and the like, comprising:

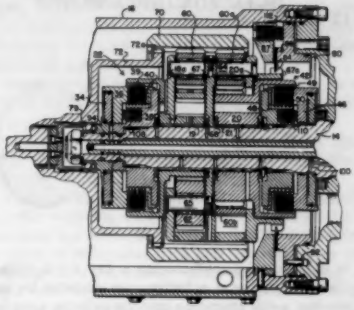
a housing,

an input shaft rotatably supported in said housing,

means for rotating said input shaft,

an output drive assembly rotatably supported in said housing,

first and second planetary drive assemblies in said housing for selectively transmitting power at three speeds in the same direction from three gear ratios between said input shaft and said output drive assembly, said planetary drive assemblies including first, second and third separate, independently actuatable friction coupling assemblies, each having friction members decoupling when spaced and coupling when pressed together,



an oil supply for lubricating said friction coupling assemblies and causing viscous drag on said spaced friction members, and

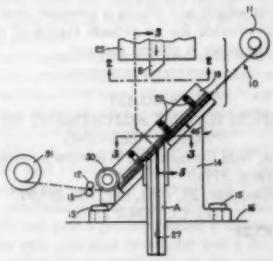
control means for selectively simultaneously disengaging no more than one of said friction coupling assemblies in any gear ratio for reducing friction power losses from said transmission.

4,453,431

METALLIC CARD CLOTHING AND METHOD AND APPARATUS FOR MAKING SAME

John D. Hollingsworth, P.O. Box 516, Greenville, S.C. 29602

Division of Ser. No. 940,004, Sep. 6, 1978, Pat. No. 4,233,711. This application Jul. 9, 1980, Ser. No. 167,069
Int. Cl.³ B21F *45/10*
U.S. Cl. 76—011 **4 Claims**



1. The method of punching teeth in a longitudinally fed strip of wire in the manufacture of metallic card clothing comprising:

continuously feeding said strip longitudinally past a die;

inclining the strip in an acute angle with respect to the direction of travel of a driven punch operating in cooperation with said die; and

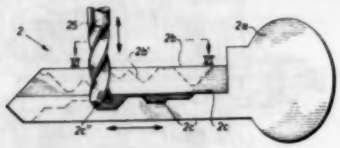
while the strip is so inclined driving said punch into operative engagement with the die defining the forward edge of a tooth inclined at an acute angle angle transversely of the tooth, a root cut and a trailing edge of an adjacent tooth;

whereby a sharpened leading edge of said tooth is formed by said inclined forward edge for improved carding.

4,453,432
METHOD OF MANUFACTURING A KEY FOR A CYLINDRICAL LOCK

Bo G. Widen, Torshälla, Sweden, assignor to GKN Stenman, AB, Eskiltuna, Sweden

Division of Ser. No. 165,358, Jul. 2, 1980, Pat. No. 4,356,713.
This application Aug. 2, 1982, Ser. No. 404,324
Claims priority, application Sweden, Jul. 10, 1979, 7906023
Int. Cl.³ B21K 13/00; E05B 19/02
U.S. Cl. 76—110 1 Claim

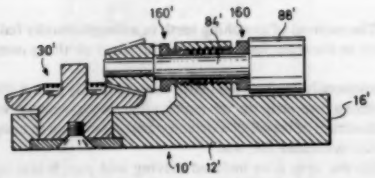


1. A method of manufacturing a key for a cylinder lock comprising a housing, a cylinder core mounted for rotation in said housing, a slot extending into the cylinder core parallel to the rotational axis thereof for receiving the key and a row of locking pins of circular cross-section guided in bores in said cylinder core which bores intersect over parts of their lengths with said slot, the pins being movable against spring means when a key is inserted into said slot and the center lines of the pins lying in a plane; comprising setting up a key blank having a blade relative to a rotatable cutting tool so that the axis of rotation of the cutting tool lies substantially parallel to said plane and effecting relative displacement between the tool and key blank along the tool's axis of rotation and longitudinally of the blade of the key blank while engaging an edge portion of said blade by said tool, to cut material from the blade to form a coded surface thereon, said coded surface having code portions for holding respective pins in predetermined positions when the key is in an operative position in said slot and transition portions which extend lengthwise between adjacent code portions to engage and guide the pins substantially for the whole of the distance between adjacent code portions as the key is moved into and out of its operative position, each transition portion having a concavely curved cross-sectional shape transverse to its length and which is constant over the transition portion to provide for an arcuate region of engagement with a pin as the latter is guided thereby.

4,453,433
GEAR WRENCH HAVING ADJUSTMENT TO ASSURE PROPER MESHING

Burke Clement, 7823 Gleason Rd., Westview Towers, Apt. 1214, Knoxville, Tenn. 37919

Filed Apr. 27, 1981, Ser. No. 257,917
Int. Cl.³ B24B 17/00
U.S. Cl. 81—57.29 6 Claims



1. An improved gear wrench for use in manipulating bolts and similar threaded members, particularly in confined locations, which comprises:

an elongated body member having first and further end portions;

a housing carried by said first end of said body member, said housing defining a cylindrical bore having an axis substantially perpendicular to said body member;

a driven gear rotatably mounted within said bore of said housing, said driven gear defining a substantially planar surface circumscribed by a plurality of radially extending teeth;

a stud extending substantially perpendicularly from said planar surface along said axis of said bore, said stud providing for releasable attachment for wrench units;

a shaft supporting member having first and further end portions carried by said body member, said shaft supporting member provided with an elongated cylindrical passageway having an axis substantially parallel with said body member;

an elongated shaft rotatably received within said passageway, said shaft having first and further end portions, said first and said further end portions of said shaft extending beyond said first and said further end portions of said shaft-supporting member, said first end portion of said shaft terminating proximate said teeth of said driven gear;

a pinion gear secured to said first end portion of said shaft, said pinion gear including radially extending teeth which mesh with said teeth of said driven gear whereby rotation of said shaft imparts rotational movement to said driven gear and said stud;

a driving hub secured to said further end portion of said shaft for receiving rotary input means for rotating said shaft;

a first adjustment bushing encircling said shaft received within said passageway proximate said first end portion of said shaft supporting member, said first adjustment bushing provided with a first end portion which engages said pinion gear and a second end portion which engages said passageway and provides for axial movement of said first adjustment bushing;

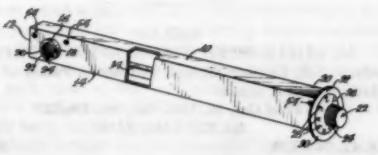
a further adjustment bushing encircling said shaft received within said passageway proximate said further end portion of said shaft supporting member, said second adjustment bushing provided with a first end portion which engages said driving hub and a second end portion which engages said passageway and provides for axial movement of said second adjustment bushing;

whereby said first and further adjustment bushings provide for precise axial movement of said shaft and said pinion gear to achieve correct mesh of said teeth of said pinion gear with said teeth of said driven gear.

4,453,434
ROTARY ADJUSTING TOOL FOR USE IN INACCESSIBLE AREAS

James Lissy, 3541 N. Jugtown, Morris, Ill. 60450

Filed Dec. 6, 1982, Ser. No. 447,054
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.29 8 Claims



1. An adjusting tool for use in rotatably adjusting rotary elements disposed in inaccessible areas, comprising

an elongated barrel having opposed ends;

a driver rotatably mounted on one end of said barrel, and having means for coupling with a rotary element to be adjusted;

an elongated shaft journalled within said barrel;

means drivingly connecting said shaft to said driver;
a movable manual actuator at said barrel other end and connected to said shaft so that said shaft, and thus said driver, may be rotatable;
first index means associated with said actuator for movement therewith;
second index means in proximity to said first index means and mounted on said tool for movement on said tool relative to said first index means; and
means for selectively restraining said second index means against movement on said tool.

4,453,435

TOOL SUPPORT

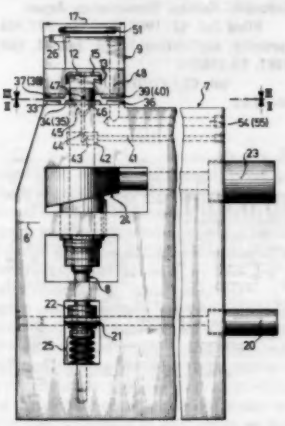
Walter Sauerwald, Dortmund; Bernd Weck, Gorxheimertal, and Klaus Schmidts, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Maschinenfabrik Deutschland AG, Dortmund, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,614

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 8112300[U]

Int. Cl.³ B23B *4/06*

U.S. Cl. 82—1.4 **17 Claims**



1. Tool support for a turning machine particularly for turning workpieces with substantially deep annular grooves, annular grooves having an inwardly increasing cross-section, comprising: a tool carrier; a turnably and axially shiftable tool clamping rod on said carrier; and a machining tool means secured by said rod for machining opposite side faces of an annular groove, said rod having a pivoting axis substantially perpendicular to longitudinal feed direction of said machine.

4,453,436

DIE CUTTER AND PROCESS FOR DIE CUTTING

Masateru Tokuno, Hyogo, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

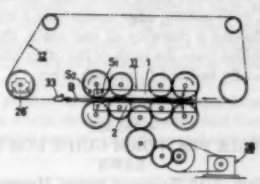
Filed Aug. 25, 1981, Ser. No. 296,058

Claims priority, application Japan, Sep. 3, 1980, 55-123934; Jul. 7, 1981, 56-107707; Jul. 17, 1981, 56-114545

Int. Cl.³ B26D *1/40, 5/22*

U.S. Cl. 83—76 **2 Claims**

1. A die cutter for cutting blanks supplied one after another into a desired shape, said die cutter comprising:
cutting means having a blade and an anvil opposed to each other for cutting blanks running therebetween and link and transmission means for driving said blade and said anvil interlocked with each other in such a manner that they will contact each other at a point moving from one end thereof to the other, said anvil having a convex-shaped upper surface;
blank feed means having a conveyor and blank grip units mounted on said conveyor for feeding blanks through said cutting means;
a first drive means driving said cutting means and a second drive means driving said blank feed means; and
speed adjusting means connected to one of said drive means for adjusting the speed of one of said drive means for bringing the blank feed speed and the horizontal component of speed of said blade into accord with each other at least during the cutting operation, said speed adjusting means being constituted by:
a first transducer means for generating pulses ϕ_A, the number thereof being proportional to the angle through which said first drive means has rotated,
a second transducer means for generating pulses ϕ_B, the number thereof being proportional to the angle through which said second drive means has rotated,
a first compensating means connected to said first transducer means for receiving the pulses therefrom and for producing a signal ϕ_A' which is, at least during the cutting operation, equal to said pulses from said first transducer means multiplied by a correction value, said correction value being a value such that the blank feed speed and the horizontal component of the speed of the blade and the anvil will be substantially equal to each other, and during the rest of one cycle of operation of said cutting means said signal will be equal to said pulses multiplied by a constant,
a second compensating means connected to said second transducer means for receiving the pulses therefrom and



for producing a signal ϕ_B' which, at least during the cutting operation, is equal to said pulses divided by said correction value and, during the rest of one cycle of operation of said cutting means, is equal to said pulses divided by said constant,
a converter means connected to one of said compensating means for converting said signal from said one compensating means to a reference voltage signal V_A proportional to the signal from said one compensating means,
a computing means connected to the transducer means corresponding to said one compensating means and to the other of said compensating means for receiving a first predetermined value Lo proportional to the number of pulses generated during a time interval from the passing of one grip unit past a predetermined point to the passing of the next grip unit past said point and a second predetermined value Bo proportional to the number of pulses generated during one cycle of operation of said cutting means as well as the signal from said transducer means corresponding to said one compensating means and the signal from the other of said compensating means and for performing a computation based on the received values and signals to obtain an analog signal Vc proportional to the result of the computation, and
a combining means connected to said converter means and to said computing means for combining the signal Vc from said computing means with the reference voltage signal V_A from said converter means for obtaining a control signal proportional to the result of the combining and for supplying said control signal to the drive means corresponding to the other of said compensating means for

controlling the driving of said lastmentioned drive means for making the result of said computation zero.

4,453,437

CUTTING TOOL HAVING MEANS FOR HEATING A WORKPIECE

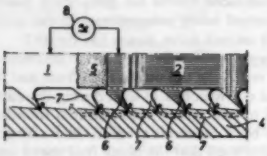
Jonas W. Ask, Skogsvägen 10, S-183 52 Täby, Sweden

Continuation-in-part of Ser. No. 237,978, Feb. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 160,177, Jun. 17, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,708

Claims priority, application Sweden, Jun. 20, 1979, 7905412

Int. Cl.³ B27B *5/00, 33/00*

U.S. Cl. 83—171 **9 Claims**



1. A cutting tool comprising at least two spaced cutting edges, means electrically isolating said cutting edges from each other, and means connecting said cutting edges to an electrical voltage source for creating a current between the cutting edges and within a workpiece being cut, to heat the workpiece at the cutting area, each cutting edge comprising a tooth of a blade, each blade having a plurality of said teeth, the teeth of one blade being offset from the teeth of the other blade, said blades being electrically isolated from each other.

4,453,438

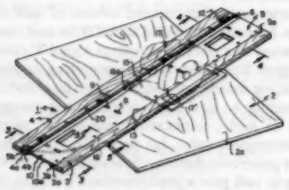
ADJUSTABLE PLATFORM GUIDE FOR CIRCULAR SAWS

Joseph M. Zelli, 2215 Woodland Spring, Houston, Tex. 77077

Filed Aug. 4, 1983, Ser. No. 520,474

Int. Cl.³ B27B *9/04*

U.S. Cl. 83—745 **9 Claims**



1. A saw guide platform for guiding a portable power saw, having a flat circular blade and a flat baseplate, across a workpiece to be cut during the sawing thereof, comprising:

an elongated flat deck;

a first flat shoulder extending from one side of said deck and being made of a material which is cutable by the saw blade, said first shoulder having an external edge which provides a first trimable blade guide edge adapted to indicate a predetermined line of cut and to guide the blade therealong, and the bottom surface of said first shoulder being adapted to contact the workpiece;

an upstanding rail extending above the upper surface of the deck, the rail having a flat upstanding guide surface along one side thereof for engaging and guiding the farther edge of the saw's baseplate so that the saw's blade will be guided by the first shoulder's guide edge;

fastening means for adjustably securing the rail to the top surface of the deck to thereby vary the distance between said guide surface and said blade guide edge; and

the top surface of the deck and the top surface of the first shoulder together providing an adjustable support surface for the saw's baseplate.

4,453,439

ELECTRONIC MUSICAL INSTRUMENT WITH GAME FUNCTION

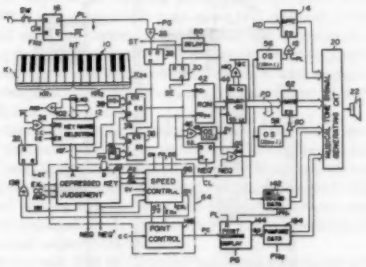
Tatsuhiro Koike, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 12, 1982, Ser. No. 397,344

Claims priority, application Japan, Jul. 14, 1981, 56-109779; Aug. 31, 1981, 56-136276

Int. Cl.³ G10H *1/053, 5/00*

U.S. Cl. 84—1.01 **7 Claims**



1. An electronic musical instrument capable of carrying out a musical game which simulates a ball hitting game, comprising:

keyboard means having a plurality of keys for generating a first key data corresponding to a pitch of key depressed among said plurality of keys;

data generating means for generating, separately from a key depression on said keyboard, a second key data representing a pitch of a key and varying its pitch in either one of opposite directions to sequentially take a higher and a lower pitch respectively;

musical tone generating means for producing one after another musical tones which correspond to said sepuentially varying second key data so that a player may select and depress, through listening to the produced tones, a key on the keyboard which he considers to correspond to a tone being produced when the player depresses the key;

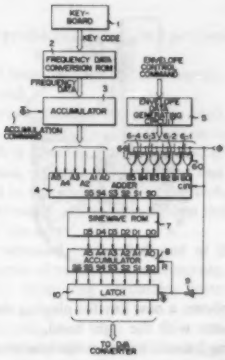
means for comparing said first and second key data for generating a coincidence signal when both said first and second key data substantially coincide with each other within a predetermined pitch difference therebetween; and

means responsive to said coincidence signal for causing said data generating means to determine the direction of further pitch variation of said second key data.

4,453,440
ENVELOPE CONTROL SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

Tsuyoshi Mitarai, Yokohama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,466
Claims priority, application Japan, Nov. 28, 1980, 55-167582; Nov. 28, 1980, 55-167583; Mar. 16, 1981, 56-36595; Aug. 21, 1981, 56-130875
Int. Cl.³ G10H 1/06
U.S. Cl. 84—1.22 16 Claims



1. In an electronic musical instrument in which periodic sinusoidal wave function data such as sine wave or cosine wave data is read out from a waveform memory according to a note frequency for forming a musical sound signal,

an envelope control system for the electronic musical instrument comprising:

a source of envelope data,

reading means coupled to said source of envelope data for reading out said periodic sinusoidal wave function data as two waveforms from at least one waveform memory, said two waveforms having the same frequency as each other and having different phases from each other, and for changing the amount of the phase difference between the two waveforms according to said envelope data,

synthesizing means coupled to said reading means for combining said two waveforms read out by said reading means,

wherein envelope control of said periodic sinusoidal wave function is effected according to changes in said phases of said two waveforms in accordance with the envelope data.

4,453,441
FREQUENCY MODULATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Dec. 6, 1982, Ser. No. 447,080
Int. Cl.³ G10H 1/06
U.S. Cl. 84—1.22 13 Claims

1. In a musical instrument having a plurality of tone generators, in which a plurality of data words corresponding to the amplitudes of points defining the waveform of a musical tone are computed and transferred sequentially to a digital-to-analog converter to be converted into musical waveshapes, apparatus for generating a frequency modulated musical tone in response to a modulation control signal comprising:

a means for generating said modulation control signal,

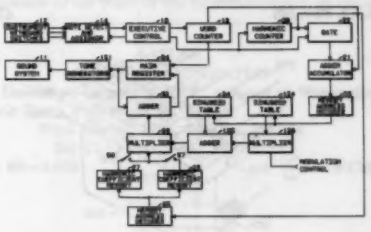
a coefficient memory for storing a set of harmonic coefficient values,

a first function means wherein a value of a first function having an odd symmetry is generated in response to an address signal,

a second function means wherein a value of a second function having an even symmetry is generated in response to said address signal,

a first addressing means for reading out said set of harmonic coefficient values from said coefficient memory and generating said address signal,

a scaling means responsive to said modulation control signal whereby said second function value is multiplied by a number corresponding to said modulation control signal to produce a scaled second function value,



an adder means whereby said first function value is summed with said scaled second function value to produce a summed function value,

a means for computing, responsive to each said read out harmonic coefficient value and each said summed function value, whereby said plurality of data words corresponding to said amplitudes of points defining the waveform of said musical tone are computed, and

a means for producing musical waveshapes from said plurality of data words thereby generating said frequency modulated musical tone in response to said modulation control signal.

4,453,442
CARRIER FOR A PERCUSSION INSTRUMENT

Thomas R. LaFlame, 107 Noble Ave., Pittsburgh, Pa. 15205

Filed Jun. 4, 1982, Ser. No. 385,292
Int. Cl.³ G01G 5/00
U.S. Cl. 84—421 10 Claims

1. A carrier for use by a person to carry a percussion or the like instrument, said carrier including the combination of:

plate means with a carrier extending outwardly therefrom for supporting an instrument at an outwardly-overhung position from a person,

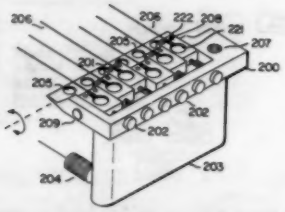
a rigid band with a generally bent contour to extend along at least a portion of the waistline area of the person from said means to the back of the person,

a back-plate riser arm supported by said band to extend in a

generally upward direction therefrom such that a portion of the arm will extend along the back thoracic region of the person, and

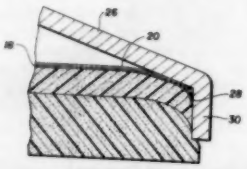
pad means carried by said arm for imparting to the thoracic back region of the person a reactive force to the overhung weight of said instrument about a fulcrum area defined by a contact area of the plate means with the person.

4,453,443
PITCH STABILIZED STRING SUSPENSION SYSTEM FOR MUSICAL INSTRUMENTS
Paul R. Smith, 33 West St., Annapolis, Md. 21401
Filed Apr. 13, 1982, Ser. No. 367,934
Int. Cl.³ G01D *3/04*
U.S. Cl. 84—298 **67 Claims**



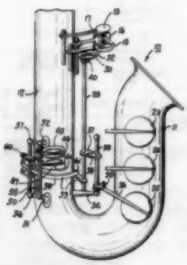
61. A stringed musical instrument having at least one string, a string suspension system, and a string suspension system support structure, wherein said suspension system comprises: a rotating tuning peg including a string clamping means mounted on said structure; a bridge having at least one roller saddle mounted thereon; a low friction nut on said structure between said rotating tuning peg and said saddle; a string extending from said tuning peg across said low friction nut and roller saddle and terminating on said bridge and having a deflection angle at said low friction nut, of less than 10 degrees.

4,453,444
KEY PADS
Pete P. Valentino, P.O. Box 6476, Stateline, Nev. 89449
Filed Feb. 3, 1982, Ser. No. 345,527
Int. Cl.³ G10D *9/04*
U.S. Cl. 84—385 P **12 Claims**



1. A pad for use in a key cup of a wind musical instrument to selectively seal a hole formed in the musical instrument, comprising at least one layer of resilient material having first and second surfaces, said first surface being capable or resiliently deforming and taking a set for selectively and effectively sealing said hole in said musical instrument, said second surface being adapted to support a layer of contact adhesive, means to secure said pad into a key cup comprising a layer of contact adhesive on said second surface, a layer of release paper releasably adhering to said layer of contact adhesive opposite said second surface, said pad except for said release paper layer consisting substantially entirely of plastic material or materials, and wherein the areas of said layers are coextensive in size and shaped to be slightly larger than the inner diameter of the key cup in which the pad is intended to be used, whereby said pad is compressed upon being assembled into a key cup and then expands to be securely held in said key cup.

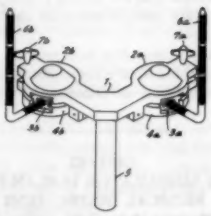
4,453,445
SAXOPHONE VALVE KEY
John H. Todd, 486 Indiana Ave., Mansfield, Ohio 44905
Filed Sep. 24, 1982, Ser. No. 422,546
Int. Cl.³ G10D *7/08*
U.S. Cl. 84—385R **14 Claims**



6. In a saxophone, a new key for playing the C-sharp note in the lower register with the right hand,

said key being located adjacent the lower end of the body of the saxophone whereby the low register C-sharp valve can be played with either the little finger of the left hand or the little finger of the right hand.

4,453,446
TOM-TOM HOLDER
Yoshihiro Hoshino, Nagoya, Japan, assignor to Hoshino Gakki Company, Ltd., Japan
Filed Nov. 24, 1982, Ser. No. 444,472
Claims priority, application Japan, Jun. 25, 1982, 57-96097
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—421 **12 Claims**



11. A holder for a pair of tom-tom drums, or the like, comprising:

a main holder body, comprising a first and a second arm, and the arms being pivotally attached together for pivoting horizontally around a vertical axis to which the arms are pivotally attached;

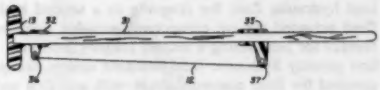
each arm having an end portion away from the pivot axis thereof; the end portion comprising a drum support for supporting a respective tom-tom drum at the end portion of the arm; the drum support being movable in its orientation with respect to the arm for adjusting the orientation of a tom-tom drum supported on the drum support; clamping means for clamping the drum support at the end of the arm at a selected orientation.

4,453,447

PERCUSSION INSTRUMENTS BOW

Leonice L. Shinneman, 1234 Skeel Dr., Camarillo, Calif. 93011

Filed Sep. 30, 1982, Ser. No. 429,216
Int. Cl.³ G10D *13/00*
U.S. Cl. 84—422 S **5 Claims**



1. A device for producing sounds on a percussion instrument comprising:

an elongated at least partially arcuate handle, having a first and second end;

a web of a material having a relatively high coefficient of friction with the edge of a percussion instrument, the first end of which is attached to the first end of the handle;

tensioning means, adapted to the second end of the handle and attached to the second end of the web, such that the web can be brought into tension against the handle across the chord of the arc;

mallet means, attached to the first end of the handle, for striking surfaces of percussion instruments.

2. A device for producing percussion instrument sounds, comprising:

an elongated handle;

a first and a second tensioning block having apertures which slightly clear the dimensions of the handle so that the tensioning blocks snugly but slideably fit the handle;

a web of material having a relatively high coefficient of friction with the surface of a percussion instrument, one end of which is affixed to the first tensioning block, the other end of which is affixed to the second tensioning block;

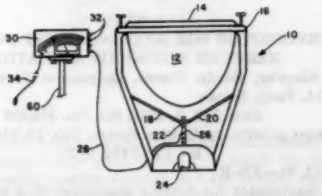
mallet means, attached to one end of the handle, for striking surfaces of percussion instruments.

4,453,448

METHOD AND APPARATUS FOR TUNING PERCUSSION INSTRUMENTS

Edward J. Miesak, 1132 Stutz Dr., NE., Albuquerque, N. Mex. 87123

Filed Feb. 24, 1983, Ser. No. 469,371
Int. Cl.³ G10G *7/02*; G10D *13/04*; G01B *7/16*
U.S. Cl. 84—454 **10 Claims**



1. A pitch monitoring device for use with one or more pitched membrane percussion musical instruments, each instrument having a tympanum and an adjustable tuning mechanism connected to the tympanum for varying the tension in the tympanum to control the pitch of the instrument, and the adjustable tuning mechanism has a common structural member through which all tensile stress forces applied to the tympanum must pass, said device comprising:

transducer means for monitoring tensile stress in the common structural member of the adjustable tuning mechanism and providing an output signal that indicates the tensile stresses present in the common structural member,

a signal conditioning module means connected to said transducer means for providing a regulated excitation voltage thereto, said module means further including signal conditioning circuitry connected to said transducer means for receiving the transducer means output signal and conditioning said transducer means output signal, and thereafter providing a conditioned signal representative of the tensile stresses measured by said transducer means,

a regulated power supply connected to said signal conditioning module for providing power thereto, and

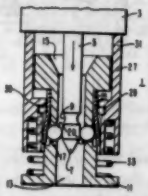
readout means connected to said module means for receiving the conditioned output thereof and providing a visual indication of the pitch of the instrument being monitored.

4,453,449

HOLDING APPARATUS

Martin Hollmann, Cupertino, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 10, 1981, Ser. No. 300,843
Int. Cl.³ F16L *27/00*; F41F *3/06*
U.S. Cl. 89—1.806 **9 Claims**



1. A holddown apparatus comprising a shaft having a nose portion on one end thereof and a notch adjacent said one end, and a mass attached to a second end of the shaft;

a receptacle having a bore for receiving said shaft and at least one port in communication with said bore;

a detent member slidably disposed in said port;

a sleeve slidably disposed over a portion of said receptacle, said sleeve having a plurality of notches extending from one end thereof forming at least one digital member which contacts said detent member;

a skirt disposed over said sleeve and having at least one protrusion extending from the inner side thereof, the protrusion contacting the digital member and said skirt also having a portion extending beyond said receptacle;

the length of the shaft and position of the port being such that the nose portion of the shaft contacts the detent before the extended portion of the skirt contacts the mass and the extended portion of the skirt contacts the mass before the detent member contacts the notch in the shaft, whereby when the mass moves against the extended portion of the skirt, the protrusion extending from the inner side of the skirt slides toward the distal end of the digital member of the sleeve to increase the force which subsequently is applied through the shaft to initiate removal of the notch in the shaft from the detent member when the shaft is subsequently extracted from the receptacle.

4,453,450

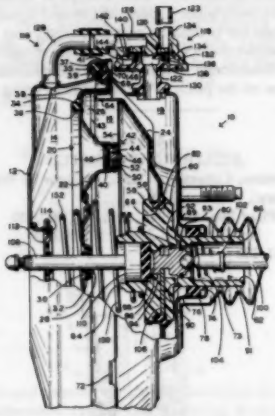
FLUID MOTOR

John J. Horsting, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 18, 1981, Ser. No. 332,075
Int. Cl.³ F15B *20/00*, *21/00*, *9/10*
U.S. Cl. 91—5 **11 Claims**

1. In a fluid motor having a housing with a cavity therein divided into first, second and third chambers by a wall arrangement, first valve means for controlling communication of a

fluid between said first and second chambers, and second valve means for controlling communication of said fluid between said second and third chambers in a first mode of operation, said second valve means being responsive to an input signal for communicating said fluid from said second chamber to a surrounding environment in a second mode of operation to create a first pressure differential across said wall arrangement between said first and second chambers and a second pressure



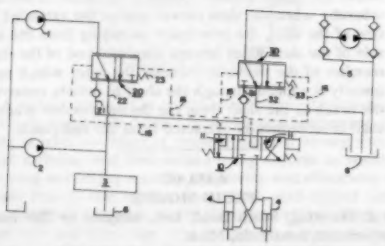
differential across said wall arrangement between said second and third chambers, the wall arrangement being characterized by a first member located between said first and second chambers and a second member located between said second and third chambers, said second pressure differential acting on and moving said second member toward said first member to produce an output force while said first pressure differential normally holds said first member in a substantially stationary position to establish a storage reservoir for said fluid.

4,453,451

HYDRAULIC STEERING SYSTEM WITH AUTOMATIC EMERGENCY PUMP FLOW CONTROL

Robert T. Streeter, Pleasant Plains, and David F. Carl, Springfield, both of Ill., assignors to FiatAllis North America, Inc., Deerfield, Ill.

Filed Nov. 10, 1980, Ser. No. 205,184
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—28 **4 Claims**



1. A hydraulic system wherein multiple sources of hydraulic fluid can be selectively diverted to perform system functions according to a predetermined priority comprising

primary pump means for creating a first source of pressurized hydraulic fluid for coupling to a hydraulic fluid actuated system component actuable upon receipt thereof for performing a first priority function,

secondary pump means for creating a second source of pressurized hydraulic fluid for coupling to a hydraulic fluid actuated system component actuable upon receipt thereof for performing said first priority function,

tertiary pump means for creating a third source of pressurized hydraulic fluid for coupling to a second hydraulic fluid actuated system component actuable upon receipt thereof for performing a second priority function,

a first priority hydraulic fluid actuated system component coupled for fluid communication with said first and second source of pressurized hydraulic fluid from said primary and said secondary pump means, respectively,

a second priority hydraulic fluid actuated system component coupled for fluid communication with said first and third source of pressurized hydraulic fluid from said primary and said tertiary pump means, respectively,

control means in fluid communication with said first priority hydraulic fluid actuated system component for establishing a pressure differential through said first priority hydraulic fluid actuated system component in response to the passage of hydraulic fluid to said first priority hydraulic fluid actuated system component,

primary compensator valve means coupled between said primary pump means and said first and said second priority hydraulic fluid actuated system components for selectively coupling said first source of pressurized hydraulic fluid to said first or said second priority hydraulic fluid actuated system components in response to said pressure differential established through said first priority hydraulic fluid actuated system component,

secondary compensator valve means coupled between said secondary pump means and said first priority hydraulic fluid actuated system component for selectively coupling said second source of pressurized hydraulic fluid to said first priority hydraulic fluid actuating system component in response to a predetermined decrease in the pressure differential established through said first priority hydraulic fluid actuated system component, and

said control means in fluid communication with said first priority hydraulic fluid actuated system component for establishing a pressure differential through said first priority hydraulic fluid actuated system component in response to the passage of hydraulic fluid thereto being in further fluid communication with said secondary compensator valve means for establishing a pressure differential through said second compensator valve means to control the coupling of said second source of pressurized hydraulic fluid to said first priority hydrualic fluid actuated component.

4,453,452

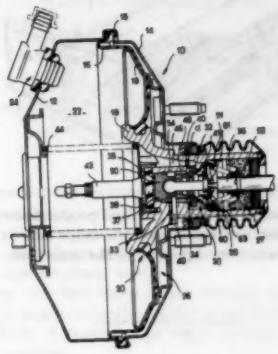
SERVOMOTOR FOR BRAKING ASSISTANCE WITH REDUCED STROKE OF ACTUATION

Guy Meynier, Bondy, France, assignor to Societe Anonyme DBA, Paris, France

Filed Feb. 3, 1982, Ser. No. 345,498
Claims priority, application France, Feb. 19, 1981, 81 03270
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R **5 Claims**

1. Servomotor for braking assistance, of a vacuum type, including a first chamber (22) intended to be connected to a vacuum source, a second chamber (26) separated from the first chamber by a driving piston (20) connected to an output member, said driving piston comprising a distribution valve (30) actuable by an input push rod (36) to selectively put said second chamber in communication with said first chamber or with the atmosphere, said valve comprising a movable annular valve poppet (32) resiliently axially biased and capable of coming alternately into sealing abutment against a movable seat (34) integral with said push rod and against an annular seat (40) defined in said driving piston around said movable seat,

said movable seat being constructed at one end of a plug (50) mounted axially slidingly within said driving piston, said valve poppet being in abutment against said movable seat and spaced apart from said annular seat in the rest position of the servomotor, characterized in that it comprises a movable stop (60) extending approximately perpendicularly to the axis of said rod



and resiliently axially biased so as to normally bear in abutment against a bearing surface (51) which is fixed relative to the driving piston, in said rest position, and in that said stop cooperates with an abutment surface (61) of said push rod to maintain in said rest position said movable valve poppet at a short distance (d) from said annular seat, thereby reducing the idle stroke of actuation of the servomotor.

4,453,453

HYDRAULIC CONTROL DEVICE

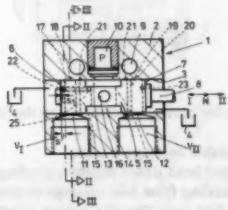
Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Heilmeier & Weinlein Fabrik Fuer Oel-Hydraulik GmbH & Co. KG., Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,184

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 3022592

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—451 **6 Claims**



1. A hydraulic control device for a hydraulic working cylinder, comprising a slide control valve, in which the flow of working pressure medium through first and second user flow passages is controllable by corresponding control edges of a piston slide displaceable from a home position within a housing bore into opposed control positions, said piston having flow control edges, (6,7) at least one auxiliary control passage connected to the housing of the slide control valve, said control passage having a control bore (22,23) discharging into a longitudinal section of the housing bore which is swept by one of the control edges of the piston slide when said one control edge is being presented in controlling position to the related user flow passage for controlling the direct working pressure medium flow through that flow passage during movement of the piston slide between opposed control positions, the control bore being spaced from each user flow passage and so positioned that during movement of the piston slide into a selected control position the control bore is uncovered by the related control edge of the piston slide and the control bore is thereby communicated to the housing bore but not later than said control edge being presented in control position to the related user flow passage, and the control bore also being so positioned for closure thereof when the piston slide is in home position which in itself is adapted for the control of the working pressure medium flow from or to the working cylinder.

4,453,454

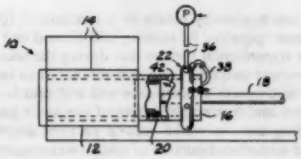
MUD PUMP LINER AND PISTON CLEANER

Johnny Comer, 522 W. 6, Elk City, Okla. 73644

Filed Nov. 18, 1982, Ser. No. 442,708

Int. Cl.³ F01B *31/00*

U.S. Cl. 92—87 **3 Claims**



1. In combination with a mud pump having a cylinder and a liner therein projecting outwardly from one end of the cylinder and having a piston reciprocated in the liner by a piston rod, the improvement comprising:

reservoir means substantially surrounding said liner adjacent its outwardly projecting end,

said reservoir means comprising an elongated closed end tubular reservoir arcuately curved throughout its length on a diameter greater than the outside diameter of said liner and having its closed ends disposed in spaced-apart relation a distance at least equal to the outside diameter of the piston rod;

pump means connected with said reservoir means for filling said reservoir means with fluid under greater than atmospheric pressure; and,

tubing means connected with said reservoir means for directing at least one stream of fluid against the inner surface of said liner.

4,453,455

FORCE AMPLIFYING DISPLACEMENT DEVICE

Gunnar Bergstrand, Norrskogsvägen 128, 145 72 Norsborg, Sweden

PCT No. PCT/SE81/00261, 371 Date May 17, 1982, 102(e) Date May 17, 1982, PCT Pub. No. WO82/00973, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 14, 1981, Ser. No. 385,642

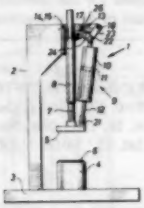
Claims priority, application Sweden, Sep. 19, 1980, 8006601

Int. Cl.³ F01B *15/02*

U.S. Cl. 92—117 A **8 Claims**

1. A device for displacement of an object along a predetermined distance relative to a frame or the like, wherein a first, longer part of the displacement requires a relatively minor force, while another, shorter part of the displacement requires a substantially greater force; said device comprising: an operating unit connected to the object, a power transmission rod linearly guided relative to the frame and displaceable along said predetermined distance and having a first end portion in power transmitting contact with the object and a second end portion, a lever mechanism operable between said frame and said power transmission rod, said operating unit being arranged substantially in parallel to said power transmission rod

and having a first end connected to said first end portion of the power transmission rod and a second end connected to the second end portion of the transmission rod via said lever mechanism in such a way that said lever mechanism is non-operative during the first part of the displacement, in which said operating unit acts directly between said frame and said first end portion of the power transmission rod, and in such a way that



said lever mechanism by means of a mechanical follower device becomes operative by sensing said second end portion of said power transmission rod, so that during the second part of the displacement said operating unit acts between said first end portion of said power transmission rod and said lever mechanism under a multiple amplification of the force generated by said operating unit, in which second part the amplified force acts on said second end portion of said power transmission rod.

4,453,456

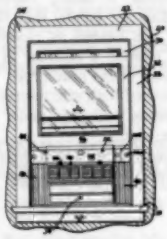
SUPPLEMENTAL VENTILATING DEVICE FOR AN AIR CONDITIONING WINDOW UNIT

Warren E. Szkudlarek, 2937 Logan Blvd., Chicago, Ill. 60647

Filed Aug. 30, 1982, Ser. No. 412,891

Int. Cl.³ E06 *7/02*; A47H *1/00*; E06B *3/32*

U.S. Cl. 98—88 S **13 Claims**



2. A supplemental ventilating device according to claim **1** in which said auxiliary door portion is slidably mounted with respect to the main door portion.

4,453,457

AUTOMATIC FOOD COOKING MACHINE

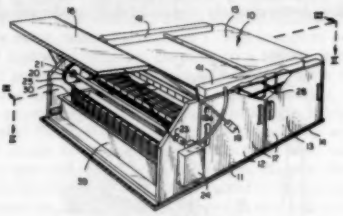
Nelson Gongwer, and Dean Gongwer, both of Wakarusa, Ind., assignors to Nelgo Manufacturing Corporation, Wakarusa, Ind.

Filed Jun. 26, 1981, Ser. No. 277,901

Int. Cl.³ A47J *37/04*

U.S. Cl. 99—345 **4 Claims**

1. In an automatic cooking machine, the combination of an oven provided with a substantially unobstructed horizontal opening, electrical heating means disposed in the oven, conveyor means mounted in the oven, food carrying means connected to the conveyor means for carrying food products to be cooked over the heating means, a sauce tank mounted in the housing for receiving sauce, and a pair of spaced runners movable over the sauce pan whereby the carrying means holding the food products to be cooked is alternately transported along the heating means and disposed into the sauce in the sauce tank for applying the sauce into the food products until the food



products are cooked and after the food products are cooked, the spaced runners are moved over the sauce tank to prevent the carrying means from dipping into the sauce tank.

4,453,458

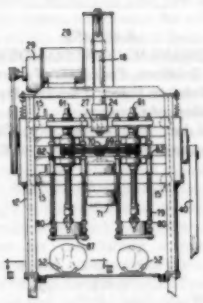
FOOD PROCESSING APPARATUS

James E. Altman, 501 Fraley St., Gray, Ga. 31032

Filed Jul. 7, 1982, Ser. No. 396,017

Int. Cl.³ A23N *3/04*, *4/00*, *15/02*

U.S. Cl. 99—544 **4 Claims**



1. Apparatus for coring vegetables and the like comprising in combination:

(A) a translatable carriage means,

(B) a vegetable hold down means including supporting rod means extending from said carriage means, said rod means including first stop forming means permitting said hold down means to assume a first stop position while said carriage means is translating,

(C) a rotatable blade assembly extensible through said hold down means and including co-rotatable sleeve means and blade supporting shaft means carried by said carriage means for translation movement therewith, said blade assembly including second stop forming means permitting said shaft means to assume a second stop position while said carriage means is translating, and

(D) guide means interconnecting said blade assembly at a definite location and slidably interconnecting said rod means and including stop means associated with said rod means limiting the extent of such translational movements of said blade assembly by reference to the position of said hold down means.

4,453,459

CAN CRUSHER

Paul J. Robbins, 387 West 5900 South, Murray, Utah 84107

Continuation-in-part of Ser. No. 166,592, Jul. 7, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 384,007

Int. Cl.³ B30B 9/32

U.S. Cl. 100—35 14 Claims

1. A method for crushing cylindrical cans along their longitudinal axes by:

positioning a can so that its longitudinal axis is substantially perpendicular to and between a pair of substantially parallel opposed planar faces;

moving each face along an arc towards the opposed face while maintaining the parallel relationship of said faces until the faces reach a proximal position with respect to one another;

continuing movement of each opposed face along the same arc with the faces moving away from one another until the faces reach a distal position with respect to one another.

4,453,460

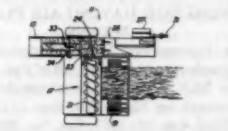
BALER HAVING PRESERVATIVE APPLICATOR WITH IMPROVED NOZZLE

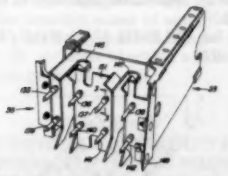
David L. Rabe, Ottumwa, Iowa, and Colin M. Hudson, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jul. 12, 1982, Ser. No. 397,303

Int. Cl.³ B30B 15/30

U.S. Cl. 100—73 6 Claims





1. In a baler for forming bales of crop material comprising an assembly for applying a volatile, crop treating fluid to said crop material as said crop material is being formed into a bale, said applicator assembly including a plurality of nozzles for dispersing said fluid into said crop material, each of said nozzles comprising a longitudinal hollow shaft having a passageway formed longitudinally of said shaft and having a plurality of openings formed therein and connected with said passageway, the improvement comprising:

said passageway having a cross-sectional area greater than the minimum sum of the cross-sectional areas of said openings.

4,453,461

BALING PRESS FOR FIBROUS MATERIALS

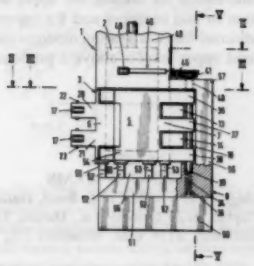
Gerold Fleissner, Wolfsgartenstr. 6, P.O. Box 1206, 6073 Egelsbach, Fed. Rep. of Germany

Filed Dec. 13, 1982, Ser. No. 449,520

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151672

Int. Cl.³ B30B 9/30

U.S. Cl. 100—255 18 Claims



1. A baling press for producing bales of fibrous material, comprising baling box means, baling ram means arranged for movement into and out of said baling box means, base means for supporting said baling box means and said baling ram means, said baling box means comprising a plurality of individual box wall members (4, 5, 6, 7), hinging means operatively hinging said box wall members for movement between a box forming closed position and an open position, locking piston cylinder means (16, 17, 30) including at least one piston rod (25) and first locking means (18) at the free end of the piston rod (25), journal means (22) operatively securing said locking piston cylinder means (30) to one of said box wall members (6), and second locking means (27) on another box wall member (4) arranged for cooperation with said first locking means (18) for power holding the box walls in a closed baling position, wherein said locking piston cylinder means has a longitudinal axis, said locking piston cylinder means being so positioned on said one box wall member (6) that said longitudinal axis extends at an angle in an angular position relative to said one (6) and to said other (4) box wall members when they are locked to each other by said locking means, whereby three of said box wall members are held together in a force locking manner.

4,453,462

APPLICATION OF A FOAMED TREATING MEDIUM TO A SHEET-MATERIAL WORKPIECE

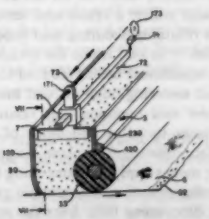
Mathias Mitter, Schloss Holte, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,602

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108963

Int. Cl.³ B05C 3/18, 17/02; B41L 13/18; B41F 31/06

U.S. Cl. 101—124 25 Claims



1. An applicator for applying a foamed treating medium to a

sheet-material workpiece, particularly a fibrous textile, comprising first means bounding a chamber having an open top and an open bottom; means for supplying foamed treating medium into said chamber via said open top so that the treating medium is discharged towards a workpiece by way of said open bottom; level equalizing second means extending across said chamber in the region of said open top; third means for displacing said second means relative to said chamber in said region so as to maintain the foamed medium in said chamber at a uniform upper level; and means for sensing the upper level of foamed treating medium in said chamber and for interrupting the admission of additional foamed treating medium via said open top when the sensed upper level is above a predetermined level.

4,453,463

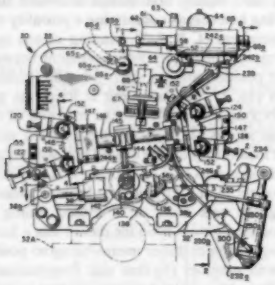
INKING SYSTEMS

Harold P. Dahlgren, 11 Turtle Creek Bend, Dallas, Tex. 75204; James E. Taylor, 4129 Drowsy La., Dallas, Tex. 75233, and John W. Gardiner, 2116 Oak Meadows Pl., Bedford, Tex. 76021

Continuation-in-part of Ser. No. 282,294, Jul. 13, 1981. This application Apr. 26, 1982, Ser. No. 371,803

Int. Cl.³ B41F *7/26, 7/36*

U.S. Cl. 101—148 **17 Claims**



1. An inking system for a lithographic printing plate comprising: a frame; and applicator roller having a resilient outer surface; means rotatably securing said applicator roller to said frame; a metering member operative upon rotation of the applicator roller for forming, from an ink film of irregular thickness carried by the applicator roller, a thin film of ink of substantially a uniform thickness, said metering member having a metering edge and a trailing edge and presenting to the irregular ink film a substantially flat metering surface on the metering member adjacent the metering edge; support means urging both the metering edge and the trailing edge on the metering member to indent the resilient roller surface; means on the resilient roller surface and cooperating with the metering member to form a reservoir for ink on the resilient surface of the applicator roller; a crank arm secured to said support means; means rotatably securing said support means and said crank arm relative to said frame for rotation about a common axis; position adjustment means secured to said frame in alignment with said metering edge on said metering member; and means to move said common axis relative to said position adjustment means to adjust the angle of intersection of said metering surface relative to a plane tangent to the applicator roller surface; means applying dampening fluid to said applicator roller for dampening a lithographic printing plate; means for removing dampening fluid from the applicator roller after the printing plate has been dampened; and positive drive means to rotate the applicator roller.

4,453,464

PRINTING PRESSES

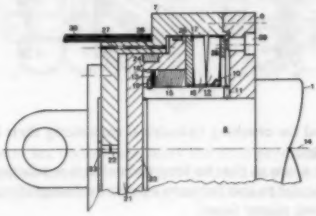
Anton Weis, Lorsch, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 440,971

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 8137709

Int. Cl.³ B41F *9/00, 13/00*

U.S. Cl. 101—153 **14 Claims**



1. In a printing press having a cylinder that is to be frequently changed, a driving shaft and a clutch for connection of said shaft with said cylinder, the invention residing in that said clutch is made up of a housing torque transmittingly joined to said shaft, a pin at one end of said cylinder, said pin being taken up within said housing, a bush within said housing, said bush being placed round said pin and being able to undergo generally radial expansion and contraction onto said pin, a stack placed round said bush, said stack being made up of frustoconical washers and having one end thereof supported axially of the pin, a spring unit for acting on an opposite end of the stack and causing said frustoconical washers to be become flatter and be responsible for an inwardly directed pushing force for causing contraction of said bush onto said pin, a piston for acting against and overriding said spring unit and decreasing the force acting on the stack, produced by said spring unit, said piston walling in a piston driving space for piston driving fluid.

4,453,465

WEB TURNING ROD HAVING AIR FLOW CONTROL MEANS

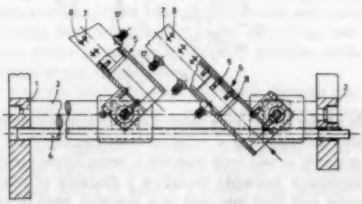
Albert Heller, Pestenacker; Hubert Birkmair, Friedberg, and Hermann Grauberger, Augsburg, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,399

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215472

Int. Cl.³ B65H *17/32;* **B41F** *13/06*

U.S. Cl. 101—228 **11 Claims**



1. Web turning rod with controlled air flow openings, for deflecting the path of a web being passed thereover having an outer hollow tube (11, 23, 30) having air supplied thereto under pressure different from atmospheric, and formed with air exchange openings (7, 8,9; 25, 29);

and means for selectively covering the air exchange openings and thereby controlled air flow therethrough

wherein, in accordance with the invention

a plurality of air tube elements (12, 24, 32) are provided, located within the outer tube (11, 23, 30),

said air tube elements being formed with air exchange openings (13) which are positioned at locations matching at least one of the air exchange openings (7,8, 9;25,29) in the outer tube;

and wherein the outer tube (11,23,30) is formed with additional openings (14,26,31) forming position adjustment openings for exposing a surface region of the respective tube elements of said plurality of tube elements to permit rotary positioning of said inner tube elements and, selectively, alignment of the air exchange openings (13) therein with the air exchange openings in the outer hollow tube.

4,453,466

PAPER DISCHARGE DEVICE FOR OFFSET PRINTING MACHINE

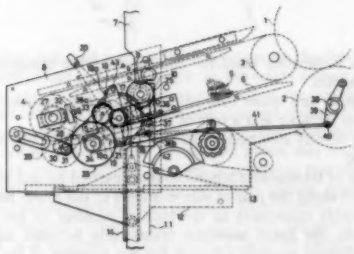
Takahiko Shinmoto, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed May 23, 1983, Ser. No. 497,305

Claims priority, application Japan, May 27, 1982, 57-78810[U]

Int. Cl.³ B41F *13/64*

U.S. Cl. 101—240 **7 Claims**



1. A paper discharge device for a printing machine, comprising: a ratchet fixedly provided on a rotary ratchet shaft, said shaft being rotatably supported on a frame in a manner such as to be rotatably coupled to a sprocket shaft; said sprocket shaft raising and lowering a table for discharged papers; a pivotable feed pawl for engaging said ratchet; a lever adapted to be reciprocated in conjunction with the driving of said printing machine; an arm for actuating said feed pawl such that said feed pawl engages and disengages said ratchet, said arm being coupled to cylinder insertion means of said printing machine, whereby said feed pawl engages and disengages said ratchet in conjunction with the operation of setting a cylinder to operative and inoperative positions.

4,453,467

INK METERING DEVICE IN AN INK DUCT FOR OFFSET OR LETTERPRESS PRINTING MACHINES

Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

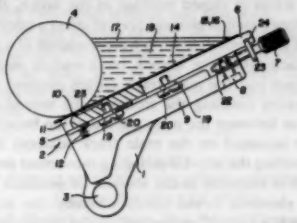
Filed May 15, 1981, Ser. No. 264,138

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018784

Int. Cl.³ B41F *1/46*

U.S. Cl. 101—363 **3 Claims**

1. Ink metering device in an ink duct for offset or letterpress printing machines having an ink duct roller with metering and support regions disposed adjacent one another in axial direction of the ink duct roller the metering regions being formed of metering elements adjustable zonewise to varying ink gap spacings spring biasing means acting against the support regions, the support regions being continuously pressed against the ink duct roller under spring biasing force, said metering device comprising a continuous single resilient support strip extending over the entire length of the ink duct roller and



supporting the metering elements, the support regions being support ledges formed on and projecting beyond said support strip, the metering elements being disposed between said support ledges, said biasing means acting on said support strip for bracing said support ledges against the ink duct roller.

4,453,468

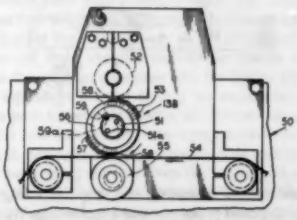
HEAT CONDUCTING MAGNETIC TYPE HOLDER FOR IMPRINTERS

James L. Shenoha, 13945 Cherokee Trail, Chickasaw Hill, Lockport, Ill. 60441

Filed Dec. 29, 1982, Ser. No. 454,349

Int. Cl.³ B41F *27/02*

U.S. Cl. 101—382 MV **7 Claims**



1. A type holder for an imprinter having a rotatable heated print head, an anvil opposing said head, and means for conveying a web to be printed in a path between the anvil and head, which comprises a heat conducting frame sized to have a slide fit with said print head and having an open window therethrough, a heat conductive magnet in said frame forming a bottom for said window and positioned for heat transfer relation with said head, paramagnetic type blocks in said window bottomed on said magnet and retained in the window by said magnet, said blocks having printing indicia projecting beyond the window and print head for printing a web in said path, said frame being a cup having a side wall embracing said head and an end wall overlying the head, said magnet being tightly fitted in said side wall, and a handle projecting from said end wall to mount and remove the frame from the head.

4,453,469

TROLLEY STOP FOR TRACK SWITCH

Beryl A. Bedford, 701 Hurlingame Ave., Redwood City, Calif. 94063

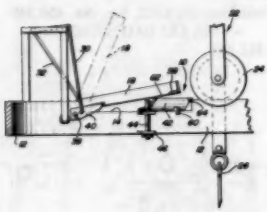
Filed Apr. 5, 1982, Ser. No. 365,254

Int. Cl.³ E01B *25/26;* B61K *7/20*

U.S. Cl. 104—100 **4 Claims**

1. In combination with an overhead track system having a

supporting trolley rolling thereon and including a generally horizontal main track having a notch in the upper surface thereof and a generally horizontal branch track having a terminal end aligned with and adjacent the main track, said main track including a switch element pivotal about a horizontal axis into and out of the notch for forming a continuation of the main track when in closed position in the notch, the branch track including a switch element pivotal about a horizontal axis into and out of the notch to form a continuation of a portion of the main track when the branch track switch element is in closed position and the main track switch element is in open position thereby enabling the trolley to be moved along the main track or between the main track and the branch track, a trolley stop mounted on the main track adjacent the notch, means supporting the stop for swinging movement into and out of the notch in response to the absence or presence of one of the switch elements in the notch whereby the stop moves directly into the path of movement of the trolley as a switch element in closed position is moved toward an open position with the stop moving to a position to prevent the trolley from rolling off the end of the track into the notch prior to the switch element moving toward open position sufficiently to enable the trolley to roll off the end of the track thereby positively precluding the trolley from rolling off the end of the track into the notch, said stop including a stop bar extending generally parallel to and slightly above the bottom edge of the



notch, said means mounting the stop including a generally vertically disposed pivot pin and bracket lugs rigidly attached to the main track below the notch for pivotally supporting the stop bar for swinging movement in a plane parallel to the bottom edge of the notch, and spring means interconnecting the stop bar and main track for biasing the stop bar towards a position in the path of movement of the trolley and biasing the stop bar against the switch element when in closed position so that as the switch element moves towards open position, the stop bar will progressively move toward a position in the path of movement of the trolley to block movement of the trolley off the end of the track prior to the switch element moving sufficiently toward open position to enable the trolley to roll off the end of the track, said spring means enabling the stop bar to pivot progressively out of the path of movement of the trolley as the switch element approaches closed position with the structure dimensioned such that the stop bar will not move out of the path of movement of the trolley until the switch element approaches a closed position sufficiently to prevent the trolley from rolling off the end of the track, said stop bar including an inclined substantially flat upwardly facing surface facing the switch elements, said switch elements being pivotally supported for movement about said horizontal axes with the swinging ends of the switch elements moving generally in a vertical plane toward and away from closed position thereby engaging the inclined surface of the stop bar and camming it about said vertically disposed pivot pin.

4,453,470

COLLAPSIBLE ARTIST'S EASEL

Sebastian Capella, 6383 La Jolla Scenic Dr. S., La Jolla, Calif. 92037

Filed Feb. 9, 1982, Ser. No. 347,169
Int. Cl.³ A47B *97/04*
U.S. Cl. 108—26 **14 Claims**

1. A collapsible easel for use by an artist comprising in combination;

an upper and lower base each having a top member, a bottom member and a pair of side members;

a leg pivotly attached to the top member of the lower base; and

a pair of translatable hinge members carried by and translatable along the pair of side members of the lower base and pivotly connected to the bottom member of the upper base, the hinge members translatable between an easel collapsed position adjacent the top member of the lower base member and an easel operable position spaced away from the top member of the lower base member toward the bottom member of the lower base.

4,453,471

PANEL RETAINING CLAMP FOR COLLAPSIBLE PALLET CONTAINERS

James V. Harrington, and Edward G. M. Baldwin, both of Calgary, Canada, assignors to HB Clip-Lok Industries Ltd., Calgary, Canada

Filed Jun. 4, 1981, Ser. No. 270,240
Int. Cl.³ B65D *19/16, 9/12;* A44B *21/00*
U.S. Cl. 108—55.1 **11 Claims**

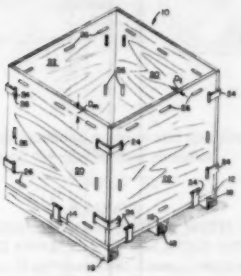
1. A clamp for retaining panels each having opposite planar surfaces spaced by a given common panel thickness and joined by at least one linear edge, each of the panels having recessed formations to define a clamping surface spaced by a common distance to the respective linear edges, said clamping surfaces facing oppositely from the linear edges in each panel, respectively, said clamp comprising a strap-like member of material having the characteristics of tempered steel, said member having generally continuous side edges lying in parallel planes perpendicular to the thickness thereof and including a central bight portion and a pair of clamping flange projections struck out from the ends of said bight portion at acute angles from the bight portion so as to lie in converging planes perpendicular to the planes of said side edges, said clamping flange projections having rounded lips at the free ends thereof spaced from each other by a total distance along said bight portion corresponding to the distance between said clamping surfaces on two panels in which the linear edge of at least one of the two panels

is in abutment with the other of said panels, and a locking tang cut from said flange projection and displaced out of the plane of said flange projection to engage a surface of said recessed formations opposite from said clamping surface.

3. A reusable and collapsible pallet container comprising:

at least five rectangular panels of a common panel thickness to define a floor panel and four side panels, each of said panels having at least one recess formation formed therein and spaced from each panel edge by a common marginal distance;

a plurality of clamping devices for retaining said panels, each of said clamping devices comprising an L-shaped bight portion having two legs extending from a common end to



a free end, and a clamping projection on the free end of each of said legs extending from the inside surface of each leg so as to converge toward each other, the length of said legs between said common end and said clamping projections, said marginal distance, and said common panel thickness being related so that said panels may be retained in an erect condition oriented in adjoining perpendicular relationship to each other with said clamps engaged in said recess formations so that said bight portion envelopes an external corner formed by two such adjoining panels, or in a collapsed condition in which the panels are arranged in overlying stacked relation with all panels engaged between the clamping projection on one of said legs and the other of said legs.

4,453,472

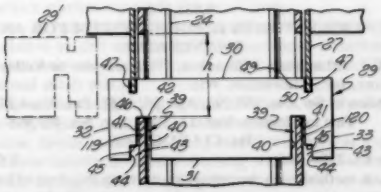
RACK STRUCTURE

Leonard H. Ward, La Canada, Calif., assignor to M. E. Canfield Company, Los Angeles, Calif.

Filed Feb. 22, 1982, Ser. No. 350,755

Int. Cl.³ A47F *5/10*

U.S. Cl. 108—107 **25 Claims**



1. A rack structure comprising:

an upright having spaced generally parallel first and second walls, and a third wall extending therebetween and generally perpendicular thereto and merging with said first and second walls at two corners of the upright;

said upright containing first and second openings at said two corners respectively;

a clip extending between said first and second walls at an inner side of said third wall and having opposite first and second end portions projecting into and supported within said first and second openings respectively of the upright; and

a shelf received at one side of said upright and including a member supported by said first end portion of said clip laterally outwardly beyond said first wall;

said second end portion of said clip being turned generally perpendicular to the major portion of the clip for reception at an outer side of said second wall at a location limiting movement of the clip toward said first wall of the upright.

4,453,473

PLANT FOR SUPPLYING HEATING SYSTEMS WITH SOLID FLOWABLE FUEL

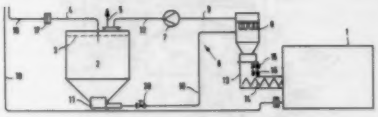
Otmar Link, Buchen-Götzingen, Fed. Rep. of Germany, assignor to Azo-Maschinenfabrik Adolf Zimmermann GmbH, Osterburken, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 461,983

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205146

Int. Cl.³ F23K *3/02*; F23G *7/00*

U.S. Cl. 110—106 **5 Claims**



1. An apparatus for supplying the boiler of a small to medium-sized heating plant with flowable solid fuel, comprising:

at least one fuel storage container for holding a quantity of flowable solid fuel for delivery to the boiler and have an air blow-off line; vacuum conveying means extending between the storage container and the boiler and including an aspiration blower having an aspiration port and pressure port to provide motive air for moving the flowable solid fuel through the conveying means, and separator means having a clean gas outlet port and fuel outlet port for separating the fuel from the motive air, said aspiration port of the blower being connected to said clean gas outlet port of said separator, said pressure port of the blower being connected to an air pressure head of the container; a connection chamber connected between said fuel outlet port of said separator and the boiler for receiving the fuel separated from the air; means for closing off the connection chamber from the separator and conveyor means between the chamber and boiler for delivering the separated fuel to the boiler.

4,453,474

METHOD FOR CONTROLLING TEMPERATURES IN THE AFTERBURNER AND COMBUSTION HEARTHS OF A MULTIPLE HEARTH FURNACE

Frederick M. Lewis, Mountain View, Calif., assignor to Sterling Drug, Inc., New York, N.Y.

Division of Ser. No. 192,021, Sep. 29, 1980, Pat. No. 4,391,208. This application Sep. 24, 1982, Ser. No. 423,213

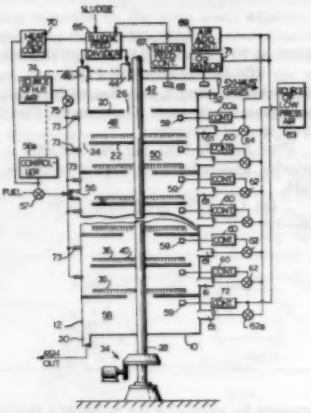
Int. Cl.³ F23G *5/00*

U.S. Cl. 110—188 **12 Claims**

1. In a multiple hearth furnace for incinerating waste material and having a plurality of superimposed hearths constituted by an uppermost waste material handling hearth, a plurality of combustion hearths below said uppermost waste material handling hearth, and a lowermost ash-cooling hearth, and including means for feeding waste material from the uppermost waste material handling hearth downwardly through the plurality of combustion hearths and discharging ash from the ash-cooling

hearth and permitting combustion gases to flow upwardly through said hearths countercurrent to the waste material, an afterburner connected to the uppermost waste material handling hearth for receiving combustion gases from the uppermost waste material handling hearth and having an exit discharging them and waste material feed means for feeding waste material to be incinerated to the uppermost waste handling hearth; the improvement comprising:

air supply means for supplying combustion air to the respective combustion hearths which is constituted by a plurality of small nozzles directed into each combustion hearth at points spaced around the hearth and high pressure air



supply means connected thereto for directing high velocity jets of air into the hearth to promote a cyclonic gas flow and create turbulence therein to ensure uniform mixing of the air and combustion gases so that the temperature measured in an individual hearth accurately represents the combustion conditions therein, and a plurality of large cross-section conduits opening into the hearth at points between said nozzles and low pressure air supply means connected thereto, whereby the air flow through said conduits can be controlled in response to the temperature measured in only the corresponding hearth for controlling the combustion conditions in that hearth.

4,453,475

COMBUSTION CHAMBER CONSTRUCTION

Heinz Plöger, Oberhausen, Fed. Rep. of Germany, assignor to Deutsche Babcock Bau GmbH, Oberhausen, Fed. Rep. of Germany

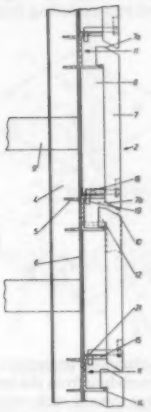
Filed Aug. 9, 1982, Ser. No. 406,706

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131310

Int. Cl.³ F23M *5/00*

U.S. Cl. 110—336 **7 Claims**

1. A combustion chamber, particularly incinerators, comprising: first means forming an outer wall bounding a combustion space; second means forming an inner wall bounding said space and comprising a plurality of plates each having an upper and a lower edge region; and cooperating mounting portions on said first means and said upper edge regions of said plates for suspending the plates at least substantially vertically on said first means so as to define a clearance with said outer wall for passing air to the interior of the combustion space; said first means comprising an upright supporting structure and a gas-tight sheet-metal enclosure mounted on said supporting structure; said plates being of ceramic material; said plates being vertically oriented and having a predetermined height in vertical direction; said mounting portions including first mounting portions on said supporting structure which are vertically spaced from one another by a distance smaller than said predetermined height; said plates also having respective upper and lower edges on said edge regions thereof; said mounting portions including second mounting portions on said upper edge regions of said plates, said second mounting portions being substantially hook-shaped and hooked onto a respective one of said first mounting portions so that each plate is suspended from one of said first mounting portions, the lower edge regions of each thus suspended plate being supported against one of said first mounting portions which is adjacent to the first



mounting portion from which the respective plate is suspended; said first mounting portions being U-shaped profiles each having a pair of generally horizontal arms including an upper arm against which the lower edge region of a superjacent plate is supported, and a lower arm from which the second mounting portion of a subjacent plate is suspended; each of said first mounting portions having an opening; and further comprising a plurality of hook elements each engaged in one of said openings and each also engaging at least one of said plates so as to prevent the plate from swinging.

4,453,476

LIQUID WASTE FEEDING SYSTEM FOR AN INCINERATOR

Kjell I. Erlandsson, Milwaukee, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

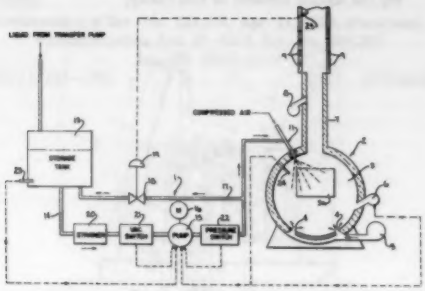
Division of Ser. No. 258,993, Apr. 30, 1981, Pat. No. 4,372,226. This application Aug. 13, 1982, Ser. No. 407,955

Int. Cl.³ F23G *7/06*

U.S. Cl. 110—346 **8 Claims**

1. A method of incineration, comprising the steps of burning solid waste in a combustion chamber of an incinerator, discharging waste gases of combustion from the combustion chamber through a stack, mounting a liquid supply nozzle in sliding relation with respect to an opening in said incinerator whereby the nozzle can be moved between a retracted position located outside of the combustion chamber and an extended position located within the combustion chamber, measuring the temperature of the gases in the stack, moving the nozzle from the retracted position to the extended position when the

stack temperature is at a predetermined elevated value, and introducing liquid waste into the nozzle after the nozzle has



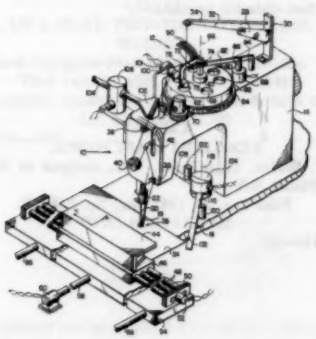
been moved to the extended position and spraying said waste from the nozzle into the combustion chamber.

4,453,477

THREAD CONSUMING MACHINE WITH THREAD COLORING DEVICE AND RELATED PROCESS

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific, Inc., South Windsor, Conn.

Filed Dec. 4, 1981, Ser. No. 327,622
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **19 Claims**



1. The combination comprising:

a sewing machine consuming thread at a stitching station at which stitches are made in a workpiece,

means for moving said stitching station and a workpiece relative to one another in two coordinate directions to allow said sewing machine to stitch along a two dimensional stitch path,

guide means for guiding a thread from a supply thereof along a given path to said stitching station,

a color device positioned along said thread path at a color station remote from said stitching station, said color device having color selecting means operable to cause a thread issuing from said color station to have a selected one of a plurality of different possible colors,

a computer with a memory means storing instructions dictating a schedule of work to be performed at said stitching station, said computer being responsive to said instructions to control the operation of said sewing machine in making stitches at said stitching station and also to control said means for moving said stitching station and workpiece relative to one another to cause said sewing machine to automatically stitch along a two dimensional stitch path defined by said work schedule instructions, and

means for producing a color change signal indicating the desire for a new thread color at a given point in said work schedule performed at said stitching station,

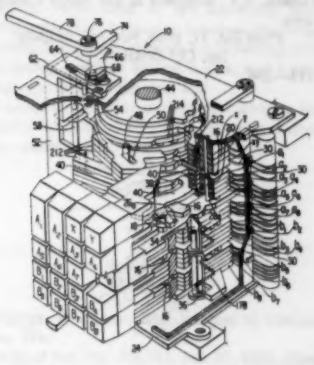
said computer also being responsive to said color change signal for both operating said color selection means of said color device to effect a change in the color of the thread issuing therefrom and for causing thread movement along said path so that thread of the new color resulting from said change arrives at said stitching station when the work performed at said stitching station is at said given point in said work schedule.

4,453,478

PUSHBUTTON CONTROL FOR SEWING MACHINE

William Weisz, Tenafly, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 21, 1983, Ser. No. 487,424
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 A **8 Claims**



1. In combination, selectively operable pushbuttons having actuated and unactuated positions, mechanism for causing predetermined patterns to be sewn on a sewing machine in actuated positions of selectively operated pushbuttons belonging to a particular group thereof, other mechanism for causing other predetermined patterns to be sewn on the machine in actuated positions of selectively operated pushbuttons in a group other than said particular group, pushbutton latch means, and means for disposing the latch means in either of alternate positions, in one of which only pushbuttons in said particular group are retainable by the latch means in actuated positions, and in the other of which only pushbuttons in the other group are retainable by the latch means in actuated positions.

4,453,479

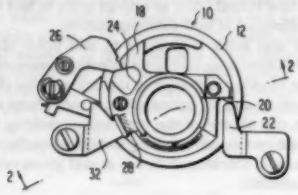
HORIZONTALLY ROTATING LOOPTAKER FOR A SEWING MACHINE

Yoshihiro Kawai, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 10, 1982, Ser. No. 347,617
Claims priority, application Japan, Feb. 13, 1981, 56-20563
Int. Cl.³ D05B *57/16, 57/20*
U.S. Cl. 112—231 **4 Claims**

1. A horizontally rotating looptaker for a sewing machine comprising a rotatable cup-shaped hook body having an inner raceway, a bobbin case mounted in said hook body on said raceway for rotation relative thereto, retaining means preventing rotation of said bobbin case with said rotatable hook body,

means for periodically oscillating said bobbin case relative to said hook body and magnetic means for biasing said bobbin



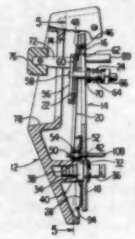
case laterally into circumferential sliding engagement with said raceway to prevent undesirable movement of said bobbin case.

4,453,480

THREAD TENSIONING MODULE FOR A SEWING MACHINE

Robert H. Larsen, Middletown, N.J., and Anthony Giaimo, Staten Island, N.Y., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 11, 1983, Ser. No. 512,849
Int. Cl.³ D05B *47/02*
U.S. Cl. 112—254 **10 Claims**



1. A thread tensioning module for a sewing machine, said module including a housing which is attachable to the machine, mechanism mounted at the rear of the housing for receiving thread and applying frictional resistance to the movement thereof during a sewing operation, a linearly movable control knob at the front of the housing operably connected through the housing with said mechanism and positionable along the housing for predetermining the magnitude of frictional resistance exertable by said mechanism on the thread, the housing having side walls one of which is on the thread entering side of the module and the other of which is on the thread exiting side, the said mechanism including a pair of friction applying thread engageable members, one of which projects beyond the other and beyond the housing side wall on the said one side of the module to catch and enable thread to be positioned between the members.

4,453,481

METHOD AND APPARATUS FOR CUTTING AND TACKING STITCHES

Frederick W. Garnett, and James C. Kelly, both of Starkville, Miss., assignors to Starkville Tool and Die Company, Starkville, Miss.

Filed Jul. 16, 1981, Ser. No. 283,808
Int. Cl.³ D05B *65/00*
U.S. Cl. 112—288 **17 Claims**

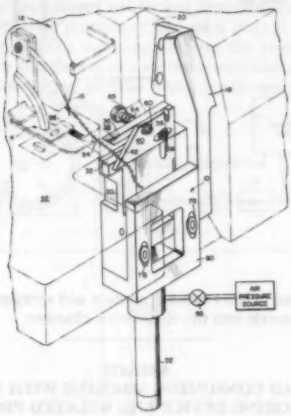
1. A device for engaging, cutting, and releasing a leading edge of threads for incorporation in a workpiece comprising:

(a) a housing;

(b) a support member forming the first element of a clamp;

(c) a first slideable member disposed in said housing;

(d) a second slideable member slideably disposed within limits in said first slideable member and said housing forming the second element of said clamp;



(e) a knife pivotally mounted on said second slideable member and pivotally actuated by said second slideable member;

(f) a pneumatically controlled cylinder; and

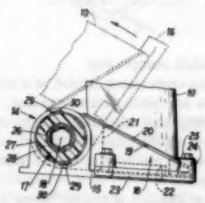
(g) an actuating rod disposed in said cylinder for actuating said first slideable member.

4,453,482

RESILIENT MAST HINGE

Milton T. Barker, High Point, N.C., assignor to AMF Inc., White Plains, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,718
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—93 **3 Claims**

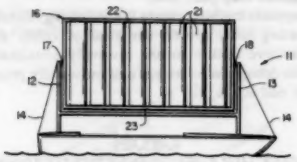


1. A resilient bottom hinge for the lower end of a marine mast, said hinge comprising a pair of superposed hinge leafs which are pivoted together at one of their corresponding ends by a mass of rubber, a hollow mast mounted on the top leaf, apertures formed in the corresponding free ends of said leafs which are aligned with the hollow in said mast for facilitating bringing electrical wires down through said mast and hinge, the aperture in the bottom leaf being surrounded by a raised flange, and the outline of the free end of said bottom leaf being followed by a depending flange on the top leaf, said flanges being operative to prevent water from obtaining access to the aperture in the bottom leaf.

4,453,483
SAIL ASSEMBLY FOR VESSELS

Frank K. Shallenberger, 191 Forest La., Menlo Park, Calif. 94025

Continuation of Ser. No. 142,248, Apr. 21, 1980, abandoned. This application Jun. 17, 1982, Ser. No. 389,298
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—102 15 Claims

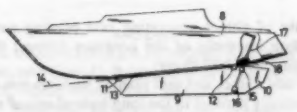


1. A sail and mast assembly for vessels comprising at least one mast adapted to be mounted on the vessel, a plurality of elongated rigid vanes or sails having an aspect ratio greater than five, each of said vanes or sails shaped as an airfoil, a frame, means for rotatably mounting said vanes or sails to said frame at their ends and parallel to and spaced from one another in said frame to form a sail assembly, and means for mounting said frame to said at least one mast for rotation about a horizontal axis which extends through the vertical center of each of said vanes or sails so that the frame can be rotated for reefing or for accepting the wind from either side of the boat.

4,453,484
HULL OF A BOAT, PROVIDED WITH KEEL AND RUDDER

Erik Englund, Lysgatan 14, S-802 36 Gävle, Sweden

Filed Oct. 30, 1981, Ser. No. 316,848
Claims priority, application Sweden, Nov. 5, 1980, 8007760
Int. Cl.³ B63B *41/00*
U.S. Cl. 114—143 2 Claims



1. A combined keel and rudder for a sail boat having a hull, including:

a keel mounted on the hull for rotation of the keel about an axis extending in the longitudinal direction of the hull,

a rudder mounted on the keel for rotation about said axis extending in the longitudinal direction of the hull, and

means for swinging the keel and rudder in unison to selected positions on either side of said axis extending in the longitudinal direction of the hull in order to counteract displacement of the center of lateral resistance of the hull when the hull heels.

4,453,485
DEVICE FOR REMOTELY STEERING A BOAT

Patrick D. Houghton-Brown, 1133 Pipeline Rd., Coquitlam, British Columbia, and Blayney J. Scott, 21 Erie St., Victoria, British Columbia, both of Canada

Filed Sep. 8, 1981, Ser. No. 300,305
Int. Cl.³ B63H *25/52*
U.S. Cl. 114—144 A 6 Claims

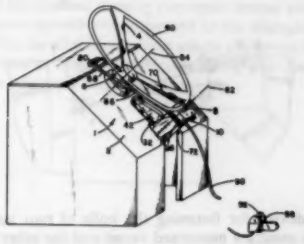
1. A device for remotely steering a boat having a steering wheel and a mounting surface adjacent the steering wheel, the device comprising:

a motor housing;

reversible motor means in the housing;

a friction drive wheel connected to the motor for frictionally driving the steering wheel;

a remotely locatable motor control for selectively rotating the motor means in the desired direction of rotation and thereby steering the boat;



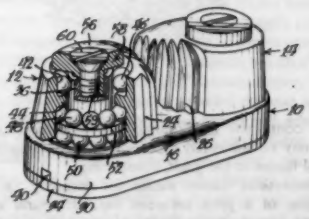
hinge means connectable to the mounting surface for hingedly mounting the motor housing, the hinge means comprising a mounting member for mounting on the boat, the mounting member having a slot, and a pin on the housing receivable in the slot; and

resilient means connectable to the motor housing for biasing the motor housing towards the steering wheel so the friction wheel engages the steering wheel.

4,453,486
CAM CLEAT

Peter O. Harken, Pewaukee, Wis., assignor to Vanguard, Inc., Pewaukee, Wis.

Continuation of Ser. No. 286,792, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 097,715, Nov. 27, 1979, abandoned, which is a continuation of Ser. No. 951,502, Oct. 16, 1978, abandoned, which is a continuation of Ser. No. 824,332, Aug. 15, 1977, abandoned. This application Jan. 21, 1983, Ser. No. 459,752
Int. Cl.³ B63B *21/08*
U.S. Cl. 114—218 29 Claims



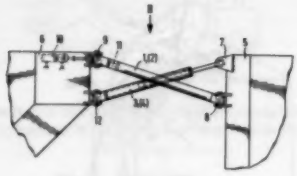
1. In a cam cleat having at least one cam-shaped pawl swingably mounted on a shaft for gripping a line, the improvement comprising a cylindrical cavity between said shaft and said pawl, said cavity defining spaced bearing surfaces on said shaft and said pawl, and a plurality of rotatable bearings disposed in said cavity and bearing between said shaft and said pawl, whereby to reduce rotational friction between said pawl and said shaft, to reduce the effort required to grip said line, and to reduce the effort required to engage and disengage the line from the cleat.

4,453,487

DEVICE FOR FASTENING TWO HULLS TO EACH OTHER

Risto Vinnari, P.O. Box 15, SF 20311 Turku 31, Finland

Filed Mar. 29, 1982, Ser. No. 363,106
Claims priority, application Finland, Aug. 13, 1980, 802546
Int. Cl.³ B63B *21/56*
U.S. Cl. 114—249 **8 Claims**



1. A device for fastening the hulls of two vesels, one of which is usually a motorized vessel and the other of which is usually a cargo carrying vessel, to each other, comprising:

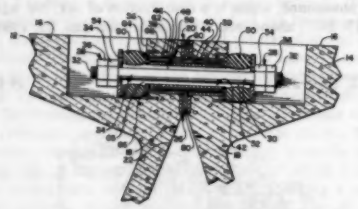
a pair of booms formed of rigid elements attached to said hulls by means including transverse bars, steering means for turning the hulls with respect to each other in a horizontal plane, and at least one additional boom formed of a rigid element extending crosswise in relation to said first pair of booms as projected on a vertical plane, means connecting said additional boom between said hulls, said booms, as projected on said vertical plane, defining the diagonals of a quadrangle formed by their attaching points to said hulls.

4,453,488

CONNECTOR FOR JOINING STRUCTURAL COMPONENTS

Ernest W. Watchorn, Vancouver, Canada, assignor to E. W. Watchorn & Associates, Inc., Vancouver, Canada

Filed Feb. 8, 1982, Ser. No. 346,505
Int. Cl.³ B63B *35/38*
U.S. Cl. 114—266 **30 Claims**



1. A connector for joining two structural components, which may be subjected to bending, shear, tensional and/or torsional forces at the joint, comprising:

a. compressive fixture means for spanning the immediate region of a joint between two structural components along a connector axis and terminating on either side of said joint at a location intermediate the length dimension of said structural components measured along said axis, said compressive fixture means having first and second ends disposed outwardly of said joint along said axis each of which includes adjustable compression means associated with a respective one of said structural components for establishing a coupling-effective force across said joint;

b. first and second socket means, one of each disposed in one of said structural components, having a first open, joint end and a second closed end including an end wall with aperture means through which said compressive fixture means may pass and side walls transversely spaced from said connector axis;

c. a shear pocket defined within said socket means between opposing end walls thereof and said side walls;

d. shear cushion means disposed within said shear pocket spanning said joint, for receiving, distributing and dissipating joint forces, said shear cushion means including central channel means through which said compressive fixture means may pass; and,

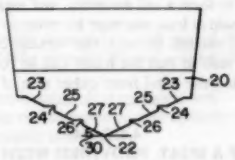
e. compression cushion means for receiving, distributing and dissipating joint forces, disposed at either end of said compressive fixture means inwardly proximate said adjustable compression means and outwardly proximate said socket end walls.

4,453,489

BOAT HULL WITH INVERTED CHINES

Richard J. Charlins, 949 Mercer Dr., Toms River, N.J. 08753, assignor to Richard J. Charlins and Carolyn A. Charlins, both of Toms River, N.J.

Filed Oct. 29, 1979, Ser. No. 89,622
Int. Cl.³ B63B *1/32*
U.S. Cl. 114—288 **7 Claims**



1. A boat hull having a bottom portion comprising:

a keel;

a plurality of pairs of longitudinal planing surfaces symmetrically displaced about said keel, with each successive planing surface on either side of said keel being of the same angularity outwardly from the keel as the next adjacent one in forming substantially co-linear contours thereof; and

a plurality of chines separating said planing surfaces and extending inwardly of the contours formed thereby, in providing said hull shape;

wherein said chines and said planing surfaces run along axes substantially parallel to the longitudinal axis of said keel in providing the shape to said hull;

wherein said chines extend inwardly of the substantially co-linear contours formed by said planing surfaces for providing a lifting action to said hull as water passes therebeneath as said hull moves forward through the water;

wherein said chines extend inwardly of said contours by a predetermined amount according to the degree of lift desired in operation as said hull moves through the water; and

wherein said chines are of a substantially triangular cross-section, having a horizontal leg which extends inwardly of said contour by said predetermined amount and at an angle parallel to the surface of the water through which the boat hull is moving.

4,453,490

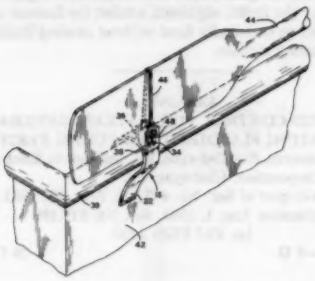
OAR REST FOR ROW BOATS

James A. Miller, 204 E. Diamond St., Kendallville, Ind. 46755

Filed Dec. 2, 1981, Ser. No. 326,607
Int. Cl.³ B63B *17/00*
U.S. Cl. 114—364 **4 Claims**

1. An oar rest for row boats comprising a generally U-shaped clamp having spaced apart mounting arms joined by an

elongated bar section, one of said arms adjacent the distal end having a clamping jaw portion facing the other arm, a clamping screw threaded into the other arm and carrying on its inner end a clamping pad juxtaposed with respect to said jaw portion, a pair of spaced retaining fingers fixedly secured to said bar section and extending oppositely from said clamping arms and above and beyond said bar section, said retaining fingers being spaced in a direction parallel to the spacing between said clamping arms, the spacing between said fingers being less than that between said arms but great enough to receive therebetween the blade of an oar, said bar section being upwardly curved and the upper portion of said one arm being outwardly curved as a smoothly curved extension of said bar section, one



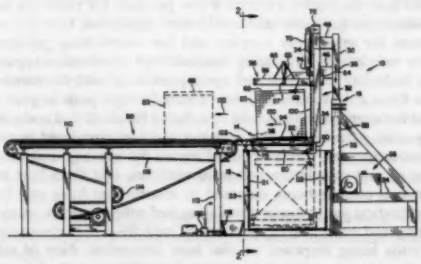
of said fingers being disposed immediately adjacent to the outermost portion of said upper arm portion but just inwardly thereof and forming an acute angle with said bar section, said bar section extending angularly upwardly away from said one finger but toward said other finger thereby to dispose the blade of an oar in said fingers above said bar section and within said acute angle toward the outboard side of a boat on which the clamp is mounted whereby a wet oar blade will tend to drain outboard and said outermost portion of said upper arm portion tends to provide protection against accidental engagement by other objects, said one finger being the outermost of said two fingers said jaw portion extending generally parallel to said other arm.

4,453,491

PACKAGED LUMBER-DIPPING APPARATUS

W. Lee Hite, and Gary C. Bright, both of Sandy, Oreg., assignors to U.S. Metal Works, Inc., Sandy, Oreg.

Filed Sep. 16, 1982, Ser. No. 419,082
Int. Cl.³ B05C *3/09*
U.S. Cl. 118—425 **14 Claims**



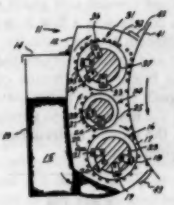
1. A lumber-dipping apparatus comprising:
a dipping tank of lumber preserving fluid;
a submersible roll case section;
a hoist mast supporting the roll case section above the tank and including means for lowering and raising the roll case section into and from the tank;
infeed conveyor means at an end of the roll case section for feeding a package of lumber onto the roll case section;
clamping means mounted on the hoist mast for vertical movement with the roll case section for clamping the package onto the roll case section so that the lumber will not float when submerged;
an outfeed transfer conveyor means for receiving the package of lumber from the roll case section after dipping;
tiltable conveyor means in the roll case section tiltable toward the outfeed transfer conveyor means; and
tilting means operatively connected to the clamping means for tilting the tiltable conveyor means to convey the package of lumber from the roll case section onto the outfeed transfer conveyor means after dipping.

4,453,492

MAGNETIC DEVELOPING UNIT WITH IMPROVED TONER DECORATOR FOR MAGNETIC PRINTING

Emery J. Gorondy, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1982, Ser. No. 407,643
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—623 **5 Claims**



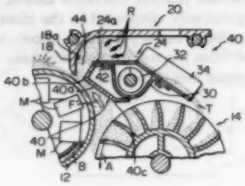
1. A magnetic developing unit comprising a decorator for applying magnetic toner to a magnetic imaging member adapted to move in a generally downwardly direction comprising a housing, a hopper adapted to feed toner to the lower portion of said housing, a toner supply roll disposed within said housing horizontally and parallel to said imaging member in the lower portion of said housing adapted to attract toner from the lower portion of said housing, said toner supply roll comprising a non-magnetic, rotatable cylindrical sleeve containing a plurality of stationary elongated bar magnets which alternate in polarity adjacent to the rotating cylindrical sleeve, a toner transfer roll disposed horizontally, parallel to said imaging member, and generally above said toner supply roll, adapted to receive toner from said toner supply roll, comprising a non-magnetic, rotatable cylindrical sleeve containing a plurality of stationary elongated bar magnets which alternate in polarity adjacent to the rotating cylinder, a decorator roll disposed horizontally, parallel to said imaging member, and generally above said toner transfer roll, adapted to receive toner from said toner transfer roll and apply toner to said imaging member comprising a non-magnetic, rotatable cylindrical sleeve containing a plurality of stationary bar magnets which alternate in polarity adjacent to the rotating cylinder, a grounded electrically conductive magnetic imaging member for receiving the magnetic toner and means for moving said imaging member to allow a portion of the imaging member to pass adjacent the decorator roll prior to the toner supply roll during transfer of magnetic toner.

4,453,493

TONER RECIRCULATING AND AGITATING DEVICE FOR DRY PROCESS DEVELOPING APPARATUS

Noboru Sawayama, Yokohama, and Masumi Ikesue, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,560
Claims priority, application Japan, Apr. 19, 1982, 57-64915
Int. Cl.³ G03G 15/09
U.S. Cl. 118—658 5 Claims



1. In a developing apparatus including a member for forming a magnet brush of a toner and a toner supply member for supplying the toner to the magnet brush forming member, a toner recirculating and agitating device comprising:

a blade member for controlling the magnet brush on the magnet brush forming member to a predetermined thickness;

means for guiding the toner scraped by said blade member off the magnet brush forming member from the blade member to the toner supply member; and

means for intensifying a force which recirculates the toner which is directed toward said guide means;

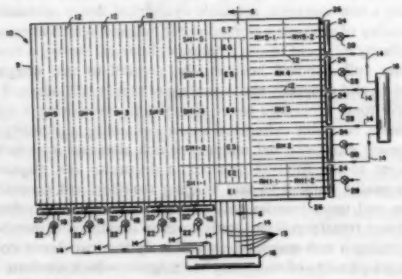
the guide means comprising a first recirculation path which has an inlet adjacent to and extending upwardly from the blade member and an outlet above the toner supply member, the force intensifying means comprising a second recirculation path which is progressively narrowed as the toner forming the magnet brush approaches the first recirculation path, the second recirculation path being defined by a fixed regulator member.

4,453,494

FLUIDIZED BED BOILER HAVING A SEGMENTED GRATE

Richard E. Waryasz, Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 22, 1982, Ser. No. 360,154
Int. Cl.³ F22B 1/00
U.S. Cl. 122—4 D 1 Claim



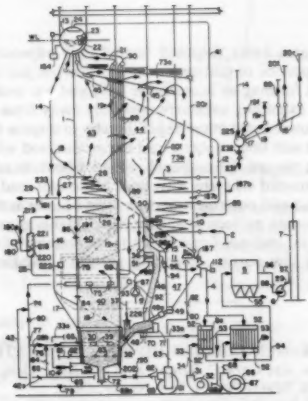
1. A fluidized bed furnace comprising a housing, a perforate grate means supported in said housing, a bed of particulate material including some combustibles supported on the grate means, said grate means being divided into a plurality of segments, means for supplying air beneath the grate means independently to each segment, burner means for directing hot combustion gases into the air being supplied to said grate means, first evaporating surface imbedded in the particulate material above first segments of the grate means, superheater surface imbedded in the particulate material above second segments of the grate means, reheater surface imbedded in the particulate material above third segments of the grate means, second evaporating surface in the form of vertical panels imbedded in the particulate material forming perforate walls separating the first evaporating surface, the superheating surface, and the reheater surface, igniter combustion means positioned so as to direct hot combustion gases into the particulate material above fourth segments of the grate means, there being no heating surface whatsoever imbedded in the particulate material above the fourth segments, so that the furnace can be quickly started up or initially fired without causing damage to any of the heating surface.

4,453,495

INTEGRATED CONTROL FOR A STEAM GENERATOR CIRCULATING FLUIDIZED BED FIRING SYSTEM

Charles Strohmeyer, Jr., Gladwyne, Pa., assignor to Electrodyne Research Corporation, Gladwyne, Pa.

Continuation-in-part of Ser. No. 477,920, Mar. 23, 1983. This application Aug. 1, 1983, Ser. No. 519,190
Int. Cl.³ F22B 1/00
U.S. Cl. 122—4 D 10 Claims



1. A steam generator having a circulating fluidized bed combustion apparatus for generating heat in association with fluid heat absorption circuits, a flue gas path for receiving hot combustion gas from said combustion apparatus, first control means for selectively varying said hot combustion gas mass flow rate in said circulating fluidized bed combustion apparatus including a recirculated spent portion of said combustion gas from a downstream point of said flue gas path as part of said hot combustion gas, said circulating fluidized bed comprising solid particles of inert material and fuel circulated in said combustion gas, second control means for varying mass flow rate of said circulating bed solid particles, said fluid heat absorption circuits being disposed to absorb heat from said hot combustion gas and said circulating bed solid particles, evaporating and superheating portions of said fluid heat absorption circuits being disposed so that heat absorption duty of said portions is responsive to variations in said hot combustion gas mass flow rate, increase in said hot combustion gas mass flow rate increasing heat absorption in one of said portions relative to said other portion and vice versa, means for integrating control of said first and said second control means adapted to distribute said heat generated by said combustion apparatus in a selective manner between/among said portions of said heat

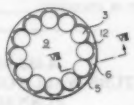
absorption circuits, and especially during conditions of variable loading of said steam generator.

4,453,496

MULTITUBULAR ONCE-THROUGH BOILER

Yuji Yoshinari, Hojo, Japan, assignor to Miura Co., Ltd., Matsuyama, Japan

Filed Jul. 30, 1982, Ser. No. 403,521
Claims priority, application Japan, Aug. 1, 1981, 56-121084
Int. Cl.³ F22B 7/00
U.S. Cl. 122—6 A 9 Claims



1. A multitubular once-through boiler comprising:
a ring-shaped upper header;
a ring-shaped lower header;
a plurality of water-tubes connecting the upper and lower headers and combining to form a water-tube wall, wherein outer surfaces of said water-tubes have a spiral channel grooved therein;
a combustion chamber surrounded by the water-tube wall;
a combustion device associated with the combustion chamber;
a ring-shaped passage formed between the water-tube wall and an outer wall of the boiler; and
a plurality of barrier plates positioned on the side of the water-tubes facing the outer wall of the boiler, wherein said barrier plates have an essentially V-shaped cross-section corresponding to the configuration of adjacent pairs of water-tubes;
wherein the outer surfaces of the water-tubes have exposed portions which are in contact with adjacent water-tubes, and covered portions which are in contact with adjacent barrier plates.

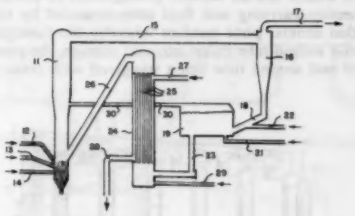
5. A multitubular once-through boiler comprising:
a ring-shaped upper header;
a ring-shaped lower header;
a plurality of water-tubes connecting the upper and lower headers, wherein outer surfaces of said water-tubes have a spiral channel grooved therein and are in contact with outer surfaces of adjacent water-tubes to form a water-tube wall;
a combustion chamber surrounded by the water-tube wall;
a combustion device associated with the combustion chamber;
a ring-shaped passage formed between the water-tube wall and an outer wall of the boiler; and
a plurality of barrier plates in contact with adjacent pairs of water-tubes, on the side of the water-tubes facing the outer wall of the boiler, wherein said barrier plates have an essentially V-shaped cross-section corresponding to the configuration of the contacted water-tubes.

4,453,497

AUGMENTED HEAT TRANSFER METHOD AND APPARATUS

James S. Davis, Warren, Pa., assignor to Struthers Wells Corporation, Warren, Pa.

Filed Dec. 21, 1982, Ser. No. 451,974
Int. Cl.³ F22B 1/00
U.S. Cl. 122—4 D 12 Claims



1. The method of heating a fluid by the combustion of carbonaceous fuel containing sulfur together with particulate sulfur sorbing material to a temperature higher than the temperature range in which the sulfur sorbing material effectively sorbes sulfur from the carbonaceous fuel without increasing the sulfur content of the gaseous products of combustion beyond that associated with said temperature range, comprising combusting the carbonaceous fuel containing sulfur together with the particles of sulfur-sorbing material in a fluidized bed within said temperature range, and not exceeding about 1700° F., drawing off the gaeous products of combustion and entrained fluidized bed solids therefrom, circulating said fluidized bed solids through a separate combustion-augmenting chamber in tandem with a heat exchanging chamber in heat-exchanging relation in the heat exchanging chamber only with the fluid to be heated therein and back to said fluidized bed, introducing additional fuel into the separate combustion-augmenting chamber and combusting that fuel in that chamber to raise the temperature of the circulating fluidized bed solids in that chamber above said range, and not less than about 1600° F., thereby raising the temperature of the fluid heated by said solids in the heat exchanging chamber above said range, and generating sulfur-containing gaseous products of combustion, drawing off from the combustion-augmenting chamber the sulfur-containing gaseous products of combustion there generated, returning them to the fluidized bed, and removing sulfur therefrom in that bed.

4,453,498

GAS- OR OIL-BURNING WARM WATER, HOT WATER OR STEAM BOILER

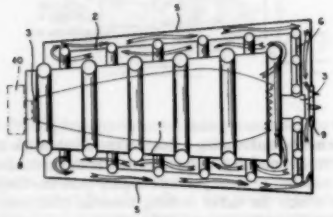
Mihály Juhász, Érdliget, Hungary, assignor to Energiagazdalkodasi Intezet, Budapest, Hungary

Continuation of Ser. No. 323,405, Nov. 20, 1981, abandoned.
This application Aug. 5, 1983, Ser. No. 520,751
Int. Cl.³ F22B 7/00
U.S. Cl. 122—136 R 1 Claim

1. A fuel-burner, comprising:
a vertical wall;
a burner provided in said vertical wall and generating a flame generally centered on a horizontal axis extending away from said wall;
a first heat-exchanging tube in the form of a membrane wall enclosing said flame, extending from said vertical wall, centered on said axis and of frustoconical configuration with a flow cross section progressively increasing away from said vertical wall and said burner, said membrane wall of said first tube being defined by axially spaced annular passageways of circular cross section and of progressively increasing annular diameter away from said vertical wall, and by thin annular plate sections bridging

said passageways whereby said passageways bulge inwardly and outwardly on said first tube, said passageways carrying a fluid to be heated;

a second heat exchanging tube coaxial with said first tube and frustonically diverging away from said vertical wall and defining a flue gas passage around said first tube from an end thereof remote from said vertical wall to an end of said second tube proximal to said vertical wall, said second tube being formed as a membrane wall from an array of axially spaced annular passageways of circular cross section carrying said fluid interconnected by respective thin annular plate sections whereby the passageways of said second tube bulge into said passage, the passageway of said second tube being staggered with respect to the



passageways of said first tube so as to lie substantially halfway between the passageways of said first tube;

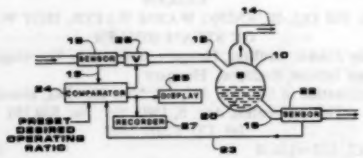
means for discharging flue gas after it has traversed said passage, said means including a heat-exchanging wall formed at the end of said second tube remote from said vertical wall and constituted by a plurality of concentric passageways traversed by said fluid, radially spaced apart and bridged by coplanar annular thin plate sections whereby the passageways of said heat-exchanging wall bulge toward said vertical wall and said flue gas passes along said heat-exchanging wall, and a jacket surrounding said second tube and defining a second passage therewith traversed by said flue gas, said passageways of said second tube bulging into said second passage.

4,453,499

SYSTEM AND METHOD FOR REDUCING SCALE FORMATION IN BOILERS

James K. Palmer, 134 Fel Mar Dr., San Luis Obispo, Calif. 93401

Filed Apr. 23, 1982, Ser. No. 371,069
Int. Cl.³ F22B *37/54*; G01R *27/02*
U.S. Cl. 122—379 **19 Claims**



1. A method for reducing scale formation in boilers, stills, or other apparatus in which an incoming liquid is concentrated, said method comprising the steps of:

(a) sensing the conductivity of the incoming liquid autonomously;

(b) sensing the conductivity of the liquid in the boiler autonomously;

(c) comparing the conductivity of the liquid in the boiler with the conductivity of the incoming liquid to determine whether the conductivity of the liquid in the boiler is excessive.

12. Apparatus for reducing scale formation in a boiler in which an incoming liquid is concentrated, comprising in combination:

first sensing means for sensing the conductivity of the incoming liquid autonomously and for producing a first electrical signal representing the conductivity of the incoming liquid;

second sensing means for sensing the conductivity of the liquid in the boiler autonomously and for producing a second electrical signal representing the conductivity of the liquid in the boiler;

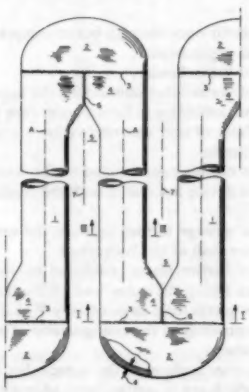
comparing means connected to said first sensing means and to said second sensing means and receiving from them respectively said first electrical signal and said second electrical signal, for comparing the conductivity of the liquid in the boiler with the conductivity of the incoming liquid to determine whether the conductivity of the liquid in the boiler is excessive.

4,453,500

COOLED TUBE WALL FOR METALLURGICAL FURNACE

Herbert Kuhlmann, Bochum, and Kurt Rieger, Bottrop, both of Fed. Rep. of Germany, assignors to Sidepal S.A., Luxembourg, Luxembourg

Filed May 14, 1982, Ser. No. 378,250
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202574
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—510 **5 Claims**



1. A tube wall for a metallurgical furnace, said wall comprising:

an array of generally parallel tubes centered on respective tube axes and each having two widened axially open tube ends one of which projects laterally from the respective tube in one radial direction and the other of which projects laterally from the respective tube in the opposite radial direction, each tube end laterally engaging the tube end of an adjacent tube, said tubes being laterally spaced between said ends

respective caps each covering two adjacent tube ends and interconnecting same, whereby the interiors of said tubes and caps form a simuous passage;

respective welds securing said tube ends and caps together hermetically to seal off said passage;

means for circulating a coolant through said array;

a support wall on one side of said array provided with anchors engaging said tubes generally at the weld between said tube ends and wholly supporting said array said array

being upright and said anchors being hooks engaged up underneath the upper caps;

additional anchors on said support wall projecting through spaces between said tubes; and

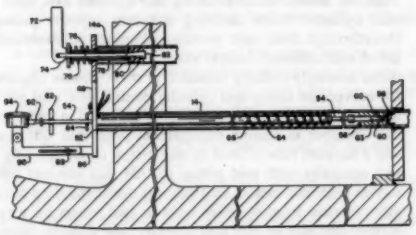
a lining of refractory material suspended by said anchors from said support wall, said widened ends having flat planar outer faces parallel to the respective axes, the outer faces of each of said tubes flatly engaging the respective outer faces of the flanking tubes, said welds including respective generally U-shaped welds lying in a plane parallel to the respective axes and extending along the edges of the flatly engaging outer faces of said tubes.

4,453,501

TRANSDUCER FOR DETERMINING IF STEAM GENERATOR TUBES ARE LOCKED IN AT SUPPORT PLATE

James K. Hayes, Chattanooga, Tenn., and Lawrence R. Hayes, Ringgold, Ga., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 6, 1982, Ser. No. 447,048
Int. Cl.³ F22B *37/24*
U.S. Cl. 122—510 **3 Claims**



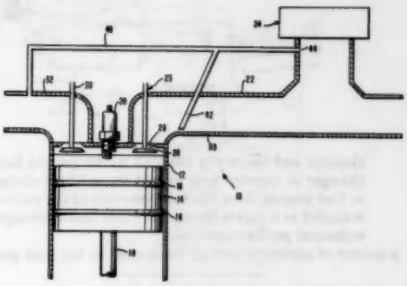
1. In combination, a nuclear steam generator including a vessel, means to introduce vaporizable fluid into the bottom portion of the vessel, an outlet near the top through which vapor is discharged, a horizontal tube sheet extending across the vessel, a plurality of U-shaped tubes, having each end secured to and extending through the tube sheet, means for introducing heating fluid to one end of each of the U-shaped tubes, means for removing heating fluid from the other end of each of the U-shaped tubes, tube support means positioned within the vessel for preventing tube vibration, the tube support means including horizontally positioned means closely surrounding, but slightly spaced from each tube, means through which access can be had to the vessel interior beneath the tube sheet when the steam generator is not in operation, and testing means for determining whether or not a tube is locked into a tube support means including a longitudinal member, with a first end located inside the tube to be tested, and a second end located outside of the tube, means for securing the first end of the member to the inside of the tube, means for heating as length of the longitudinal member, and an equal length of the tube, to an elevated temperature, and means for indicating movement of the second end of the longitudinal member away from the tube end, which would indicate that the tube is locked into the support means.

4,453,502

COMBUSTION CONTROL BY PRESTRATIFICATION

Edwin L. Resler, Jr., Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 163,898, Jun. 27, 1980, abandoned, which is a continuation of Ser. No. 140,932, Apr. 16, 1980, abandoned. This application Jan. 6, 1983, Ser. No. 456,143
Int. Cl.³ F02B *17/00, 27/08;* F02M *25/06*
U.S. Cl. 123—1 R **17 Claims**



1. A method of controlling detonation in internal combustion engines working in the Otto cycle, to permit use of low octane fuel in such internal combustion engines having a compression ratio exceeding the permissible compression ratio of the fuel, whereby the engine efficiency is improved, comprising:

supplying a charge to the intake manifold of an internal combustion engine, said charge utilizing a fuel having a permissible compression ratio less than the compression ratio of the new engine, said charge being supplied at a first pressure;

supplying a diluting gas to the intake manifold of the engine at a location near the intake port of a combustion chamber for the engine, said diluting gas being at a second pressure which is higher than said first pressure to dilute a portion of the charge within the intake manifold and to thereby prestratify the charge to be delivered to the combustion chamber;

feeding the diluted portion of the charge followed by a substantially undiluted portion of the charge to the combustion chamber while maintaining stratification to produce and end gas diluted portion of the charge within said combustion chamber at a location remote from the charge ignitor; and

igniting said charge to produce a flame front which moves from the ignition point through said combustion chamber to said end gas, the dilution of said end gas due to prestratification producing a reduced temperature in said end gas to prevent detonation.

4,453,503

COOLING DEVICE

Edwin J. Freeburn, 20 Hornseywood Ave., Penrith, New South Wales, Australia 2750

Filed May 10, 1982, Ser. No. 376,854
Int. Cl.³ F01P *1/06, 3/12;* F25B *21/02*
U.S. Cl. 123—41.31 **7 Claims**

1. A fuel cooling supply system for supplying fuel to a carburetor of an internal combustion engine, the supply system comprising:

a fuel reservoir;

a fuel line fluidly coupling the reservoir and the carburetor;

a fuel pump located along the fuel line; and

a fuel cooler located along the fuel line, the fuel cooler including:

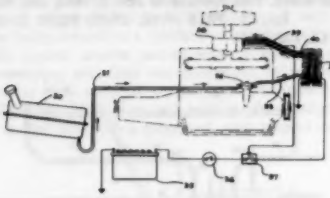
a first, cooling heat exchanger fluidly connected along the

fuel line, having a flow path between a fuel inlet and a fuel outlet;

a second, heating heat exchanger; and

a thermoelectric solid state heat pump thermally coupled to the first heat exchanger to cool said first heat exchanger and thermally coupled to the second heat exchanger to transfer heat to said second heat exchanger so fuel passing from the fuel reservoir to the carburetor is cooled as it passes through the first heat exchanger for enhanced performance; and

a source of electrical energy connected to the heat pump.

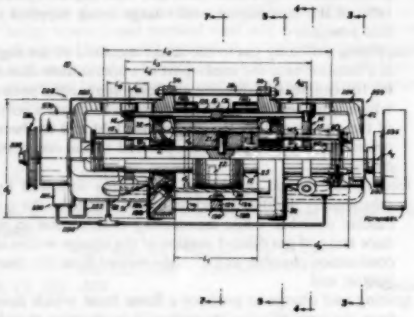


4,453,504

SINGLE PISTON, DOUBLE CHAMBERED RECIPROCAL INTERNAL COMBUSTION ENGINE

Lawrence M. Freeman, Atlanta, and Donald A. Simpson, Lilburn, both of Ga., assignors to Germicidal Electronics, Inc., Doraville, Ga.

Filed Apr. 9, 1979, Ser. No. 28,163
Int. Cl.³ F02B 75/26
U.S. Cl. 123—52 B **11 Claims**



1. An engine comprising:

a cylinder assembly having a cylinder central axis including a cylindrical annular side wall and a pair of cylinder heads closing the opposite ends of said side wall, said side wall and said cylinder heads defining a working chamber therein centered along said cylinder central axis, each of said cylinder heads defining a piston support passage therethrough from said working chamber concentrically about said cylinder central axis;

a piston assembly slidably mounted in said working chamber for movement along said cylinder central axis, said piston assembly including a piston slidably mounted in said working chamber in sealing engagement with said side wall; and a support tube affixed to said piston concentrically of and coaxially with said piston, said support tube extending coaxially outward from opposite ends of said piston for a prescribed distance so that said support tube slidably extends through both of said piston support passages in said cylinder heads in sealing engagement therewith as said piston moves from one end of said working chamber to the other, said piston assembly defining an axially extending drive shaft passage therethrough opening onto opposite ends of said support tube exteriorly of said cylinder heads;

an axially fixed drive shaft rotatably mounted in said drive shaft passage through said piston assembly so that said drive shaft can freely rotate within said drive shaft passage but remain axially fixed with respect to said cylinder assembly;

camming means interconnecting said piston assembly and said drive shaft to convert the reciprocatory motion of said piston assembly into rotary motion of the drive shaft;

valve means for selectively controlling the introduction of a working fluid into opposite ends of said working chamber;

supercharging means for selectively pressurizing the working fluid for operating said engine prior to introduction of said working fluid into said working chamber, said supercharging means defining a supercharging chamber concentrically of said working chamber; and includeing a supercharger piston reciprocally mounted in said supercharging chamber, means exteriorly of said cylinder heads operatively connecting said support tube to said supercharger piston so that said supercharger piston is reciprocated in said supercharging chamber by motion of said piston assembly; and

crossover means connecting each end of said supercharging chamber with said valve means so that pressurized working fluid at each end of said supercharging chamber is supplied to that end of said working chamber opposite the aforementioned end of said supercharging chamber.

2. An engine comprising:

a non-rotatable cylinder assembly having a cylinder central axis including a cylindrical annular side wall and a pair of cylinder heads closing the opposite ends of said side wall, said side wall and said cylinder heads defining a cylinder chamber therein centered along said cylinder axis, each of said cylinder heads defining a piston support passage therethrough from said working chamber concentrically about said cylinder central axis;

a piston assembly slidably mounted in said cylinder chamber for movement along said cylinder central axis, said piston assembly including a piston slidably mounted in said cylinder chamber in sealing engegement with said side wall; and a support tube affixed to said piston concentrically of and coaxially with said piston so that said support tubes moves with said piston, said support tube extending coaxially outward from opposite ends to said piston for a prescribed distance so that said support tube slidably extends through both of said piston support passages in said cylinder heads in sealing engagement therewith as said piston moves from one end of said piston support passages in said cylinder heads in sealing engagement therewith as said piston moves from one end of said cylinder chamber to the other to form a pair of working subchambers where each of the working subchambers is defined by said cylindrical annular side wall, one of said cylinder heads, said piston and said support tube, said piston assembly defining an axially extending drive shaft passage therethrough opening onto opposite ends of said support tube exteriorly of said cylinder heads;

a drive shaft;

drive shaft support means operatively connected to said cylinder assembly exteriorly of said cylinder chamber and rotatably mounting said drive shaft in said drive shaft passage through said piston assembly in clearance with said support tube so that said drive shaft can freely rotate within said drive shaft passage yet remain axially fixed with respect to said cylinder assembly;

camming means interconnecting said piston assembly and said drive shaft within said drive shaft passage to convert the reciprocatory motion of said piston assembly into rotary motion of the drive shaft; and

alignment means engaging said support tube on said piston assembly exteriorly of said cylinder heads to prevent

rotational movement of said piston assembly with respect to said cylinder assembly while permitting reciprocatory movement thereof within said working chamber.

4,453,505

COMPOSITE PUSH ROD AND PROCESS

Matthew W. Holtzberg, Ringwood, N.J., and Lawrence D. Spaulding, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 11, 1982, Ser. No. 387,289
Int. Cl.³ F01L *1/14*
U.S. Cl. 123—90.61 **41 Claims**

1. A composite push rod for use in an engine, comprising:
an elongated, thermoplastic, amide-imide resinous polymeric rod having opposite ends;
end caps connected to the opposite ends of said amide-imide rod, said end caps being selected from the group consisting of metal end caps and thermoplastic amide-imide resinous polymeric end caps and including
a lifter cap connected to one end of said rod for engaging a valve lifter; and
a rocker arm cap connected to the other end of said rod for engaging a connector secured to a rocker arm; and
said thermoplastic amide-imide rod, said lifter cap, and said rocker arm cap maintaining their structural integrity at engine operating conditions.

25. A process for forming a composite push rod for use in an engine comprising the steps of:
injection molding a thermoplastic, amide-imide resinous polymer to form an elongated rod;
allowing said thermoplastic amide-imide rod to cool below its plastic deformation temperature;
post curing said amide-imide rod by solid state polymerization to enhance the strength and integrity of said amide-imide rod;
connecting a lifter cap selected from the group consisting of a metal lifter cap and a thermoplastic amide-imide resinous polymeric lifter cap to one end of said amide-imide rod; and
connecting a rocker arm cap selected from the group consisting of a metal rocker arm cap and a thermoplastic amide-imide resinous polymeric rocker arm cap to the other end of said amide-imide rod.

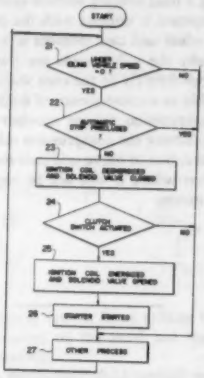
4,453,506

AUTOMATIC ENGINE STOP AND START SYSTEM

Masahiro Ueda; Masahiko Noba; Osamu Hori; Kimitoshi Murata, and Hatsuo Nakao, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 26, 1982, Ser. No. 371,970
Claims priority, application Japan, Jul. 22, 1981, 56-114574
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—179 G **8 Claims**

1. An automatic engine stop and start system for an internal combustion engine having a slow port to which fuel is fed when the internal combustion engine is in an idling condition and an ignition circuit including an ignition plug and an ignition coil producing high voltage to be fed to said ignition plug, wherein predetermined operating conditions of various predetermined portions of a vehicle are detected and the internal combustion engine is automatically stopped and started in accordance with the detected operating conditions, comprising:
a fuel control valve for cutting fuel fed to said slow port



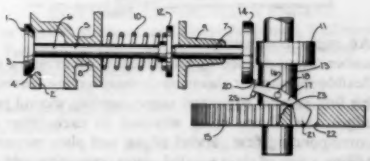
when the internal combustion engine is automatically stopped; and
de-energizing means connected to said fuel control valve and said ignition coil for cutting off current fed to said ignition coil and simultaneously closing said fuel control valve when the predetermined conditions for automatic engine stopping are fulfilled.

4,453,507

CENTRIFUGALLY RESPONSIVE COMPRESSION RELEASE MECHANISM

Daniel E. Braun, and Jack R. Bargenquast, both of Brookfield, Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Nov. 25, 1981, Ser. No. 324,776
Int. Cl.³ F01L *13/08*
U.S. Cl. 123—182 **10 Claims**



1. In an internal combustion engine having a valve which controls flow of gas through a port communicable with the engine combustion chamber and which is biased towards a seated position, valve operating means connected with said valve and against which a cam is cyclically engageable to unseat the valve, and a camshaft rotatable in timed relation to the engine cycle by a cam gear, automatic compression relief means for causing the valve to be unseated during a predetermined portion of each engine cycle at engine cranking speeds and to occupy its seated position during said engine cycle portion at engine running speeds, said automatic compression relief means comprising:
a generally U-shaped compression release member straddling the cam shaft and pivotally connected to the same by means of a pivot pin disposed transverse of said cam shaft,

an auxiliary cam member disposed on the compression release member,

biasing means to bias the compression release member in one direction about the pivot pin to positon said cam member in an operable position whereby the valve operating means will engage said cam member to unseat the valve on cranking of the engine, said compression release member having a load bearing surface spaced from said pivot pin and disposed in contact with the outer surface of said cam shaft when said cam member is in said operable position whereby the valve loads are transmitted from said cam member directly to the cam shaft, and

means operable as a consequence of centrifugal force acting on said compression release member at engine running speed for pivoting the compression release member in the opposite direction to move said cam member to an inoperative positon where it will not be engaged by the valve operating means.

4,453,508

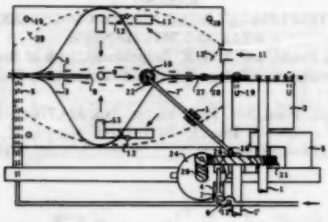
FLEXIBLE CYLINDER ENGINE

Theodore O. Groeger, 2 Collamore Cir., West Orange, N.J. 07052

Filed Oct. 22, 1981, Ser. No. 313,559

Int. Cl.³ F02F *1/10*; F01B *19/00*

U.S. Cl. 123—193 P **6 Claims**



1. An engine comprising:

chamber means defined by sheet means comprising a pair of flexible rectangular sheets, each sheet having corresponding first parallel edges and corresponding second parallel edges, said sheets being attached to each other along corresponding first parallel edges, and plate means comprising a pair of rigid parallel plates contacting said sheets along said second parallel edges, thereby forming a flexible variable capacity chamber between them, flexing means comprising a rotatable shaft connected to a rotor and first attachment means connecting one of said corresponding first parallel edges of said sheets to said rotor at a radial distance from said shaft, support means comprising a stationary support and second attachment means connecting the other of said first parallel edges to said support, inlet and outlet means within said plate means for communicating said chamber with the atmosphere, ignition means supported in said plate means and communicating with said chamber, fuel injection means in communication with said chamber, and a mechanical energy to electrical energy conversion means comprising a motor/generator connected to said rotatable shaft.

4,453,509

INTERNAL COMBUSTION ENGINE WITH BEARING BEAM STRUCTURE

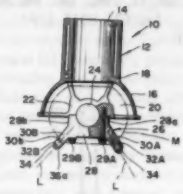
Yoshimasa Hayashi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 22, 1982, Ser. No. 351,268

Claims priority, application Japan, Feb. 24, 1981, 56-24841[U]

Int. Cl.³ F02F *7/00*

U.S. Cl. 123—195 R **9 Claims**



1. An internal combustion engine comprising:

a cylinder block having a plurality of cylinder barrels, and a plurality of bearing sections for journals of a crankshaft; and

a bearing beam structure secured to a bottom part of said cylinder block and including,

a plurality of main bearing cap sections in a row, each of which associates with each cylinder block bearing section to form a bore for rotatably receiving a journal of the crankshaft, each bearing cap section being formed with first and second projections which are spaced from each other and located opposite to each other with respect to an axis of said bore for the crankshaft journal, and

elongate first and second beam members extending along the row of said main bearing cap sections and independent from said main bearing cap sections, said first beam member being rigidly connected to all the first projections by bolts and said second beam member being rigidly connected to all said second projections by bolts so as to rigidly connect all said main bearing cap sections.

4,453,510

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

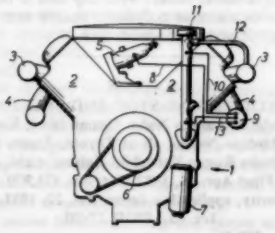
Heinz Küpper, Troisdorf-Sieglar, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,553

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236404

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 AB **7 Claims**



1. A reciprocating piston combustion engine which includes an intake air system, an exhaust gas system, a lubricating-oil system, and a fuel injection arrangement which includes at least one injection pump and one injection nozzle; to provide

lubrication for said at least one injection pump, lubricating oil can be withdrawn from said lubricating-oil system of said internal combustion engine and can be returned thereto via a lubricating-oil return line; the improvement comprises:

a vaporizer disposed in said lubricating-oil return line; said vaporizer having an intake side which can communicate with said at least one injection pump via said lubricating-oil return line, and an output side which can communicate with said lubricating-oil system of said internal combustion engine via said lubricating-oil return line, and can also communicate with said intake air system.

4,453,511

LUBRICATING ARRANGEMENT, ESPECIALLY FOR INTERNAL COMBUSTION ENGINES

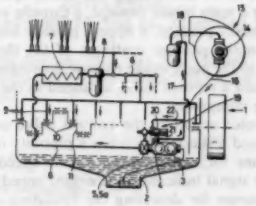
Heinz Pluequet, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 081,215, Oct. 2, 1979, Pat. No. 4,331,112. This application Mar. 19, 1982, Ser. No. 359,907

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843248

Int. Cl.³ F02B *33/40*

U.S. Cl. 123—196 S **2 Claims**



1. A lubricating arrangement for an exhaust turbo-supercharger, especially for an internal combustion engine with at least one first location requiring lubrication, and at least one second location requiring lubrication in an auxiliary equipment associated with said engine, said at least one second location being remote from said at least one first location, said arrangement in combination comprising:

a main conduit means for communicating said at least one first location and said at least one second location with a source of lubricating medium, said main conduit means including a main pressure conduit;

a single pump device operatively connectible to said main conduit means and adapted to convey a lubricating medium immediately from said source thereof to said at least one first location and said at least one second location; and

an adjustable flow control device operatively connected to said main pressure conduit, said adjustable flow control device being arranged in the main conduit means directly after said pump device and as close as possible to said pump device between said pump device and said at least one first location, said flow control device being securely and inherently urged to its closed position to protect against any running empty of the lubricating arrangement during a gradual stopping of said engine as well as during standstill thereof and being actuatable to assume an open position for lubricant supply maintained absolutely during entire operation thereof only by the pressure in said main pressure conduit between said flow control device and said pump device without any lubrication resulting directly from said pump device to the exhaust turbo-supercharger.

4,453,512

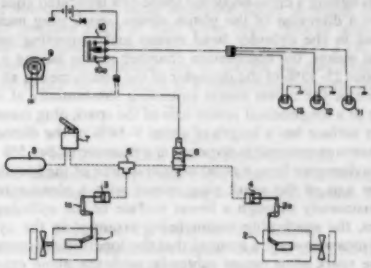
ENGINE OVERHEAT PREVENTION SYSTEM

Mitsuhisa Sakae, Kamakura, and Masaharu Hattori, Tokyo, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 372,003

Int. Cl.³ F02B *77/08*

U.S. Cl. 123—198 D **4 Claims**



1. An engine control system for a vehicle having first and second engines mounted on the front and rear ends thereof, respectively, comprising:

first and second pressurized fluid control means connected to said first and second engines, respectively, for controlling the speed thereof in accordance with the fluid pressure applied;

a source of pressurized fluid;

a control valve connected by fluid lines to said source of pressurized fluid and to said first and second control means for controlling the speed of both said engines;

a plurality of abnormal condition detector means mounted in said second engine;

solenoid operated valve means positioned in the fluid line between said control valve and said second pressurized fluid control means; and

means responsive to operation of any one of said abnormal condition detector means for actuating said solenoid operated valve means to shut off the supply of fluid from said control valve to said second pressurized fluid control means, thereby reducing the speed of said second engine to its idle speed.

4,453,513

INTERNAL COMBUSTION ENGINE

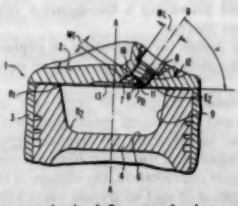
Günter Perrin, Stuttgart, and Horst Bergmann, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 20, 1982, Ser. No. 380,408

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120377

Int. Cl.³ F02F *3/26*

U.S. Cl. 123—279 **17 Claims**



1. An externally auto-ignited four-stroke internal combustion engine comprising at least one cylinder means having a piston means reciprocatingly mounted therein, a cylinder head

means, a combustion chamber means arranged in a top portion of the piston means for receiving substantially all of a fuel-air mixture when the piston means is in an upper dead-center position, the combustion chamber means having a planar bottom surface and a cross-sectional shape of a truncated cone opening in a direction of the cylinder head means, a recess means arranged in the cylinder head means eccentrically with respect to a longitudinal center axis of the cylinder means at a position above the combustion chamber means, the recess means having a cross-sectional shape of a truncated cone opening in a direction of the piston means, spark plug means arranged in the cylinder head means and projecting into the recess means, the combustion chamber means having a depth of about 25–35% of the diameter of the piston means, an upper surface of the recess means extending substantially at a right angle to a longitudinal center axis of the spark plug means, the upper surface has a length of about 9–14% of the diameter of the piston means and is disposed at a distance of 3–5.5% of the piston diameter from a point of intersection of the longitudinal center axis of the spark plug means with a plane extending approximately through a lower surface of the cylinder head means, the spark plug means being arranged in the cylinder head means in such a manner that the longitudinal center axis of the spark plug means subtends, with the plane extending approximately through the lower surface of the cylinder head means, an angle of between 45°–65°, and the recess means in the cylinder head means having a cone angle of between approximately 100°–110°.

4,453,514

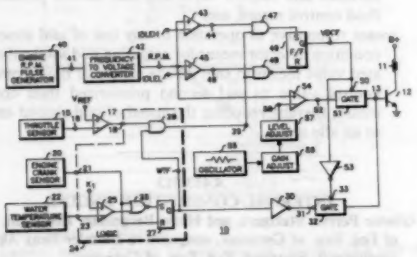
ENGINE SPEED ADAPTIVE AIR BYPASS VALVE (DASHPOT) CONTROL

Robert Martinsons, Chicago, and Robert W. Deutsch, Wheeling, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 25, 1983, Ser. No. 460,722

Int. Cl.³ F02M *23/06*

U.S. Cl. 123—327 **21 Claims**



1. Engine fuel mixture control apparatus for controlling the effective on time of an air bypass valve (dashpot) which adds additional air to the fuel mixture, in addition to the air determined by throttle position, during engine deceleration, said apparatus comprising:

sensor means for sensing the occurrence of engine deceleration and providing a deceleration occurrence signal in response thereto;

generator means for generating an engine speed signal having a magnitude corresponding to current engine speed; and

control means coupled to both said deceleration sensor means and said engine speed generator means for receiving said deceleration occurrence signal and said engine speed signal and for controlling in response thereto, during engine deceleration, the change in the effective degree of actuation of said air bypass valve substantially independently of the time duration of deceleration but substantially in proportion with the change of the magnitude of said engine speed signal.

4,453,515

DEVICE FOR CONTROLLING THE IDLING SPEED OF AN ENGINE

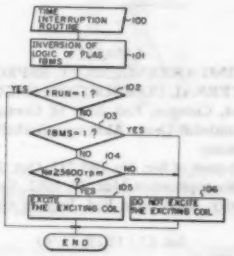
Hideo Saji, Aichi; Yasutaka Yamauchi, Toyota, and Mamoru Kobashi, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 24, 1982, Ser. No. 391,683

Claims priority, application Japan, Aug. 8, 1981, 56-124430

Int. Cl.³ F02M *23/06*

U.S. Cl. 123—339 **7 Claims**



1. A device of controlling the idling speed of an engine comprising a main intake passage, a throttle valve arranged in the main intake passage, a bypass passage branched off from the main intake passage upstream of the throttle valve and connected to the main intake passage downstream of the throttle valve, and a control valve arranged in the bypass passage, said device comprising:

a step motor actuating the control valve and comprising a rotor and a stator which has a plurality of exciting coils;

first means for detecting the engine speed to produce an output signal indicating the engine speed;

second means for detecting the operating condition of the engine to produce an output signal indicating that the engine is operating in a idling state; and

electronic control means, operated in response to the output signal of said first means and the output signal of said second means, for: 1) successively exciting said exciting coils to rotate the step motor in a direction wherein the engine speed approaches a predetermined desired idling speed when the engine is operating in an idling state, 2) exciting at least one of said exciting coils to maintain the step motor stationary when the step motor is stopped and the engine speed is higher than a predetermined speed, and 3) stopping the exciting operation of said exciting coils when the step motor is stopped and the engine speed is lower than the predetermined speed.

4,453,516

DEVICE FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Reinhard Filsinger, Wernau, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,136

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019562

Int. Cl.³ F02D *1/18*

U.S. Cl. 123—340 **34 Claims**

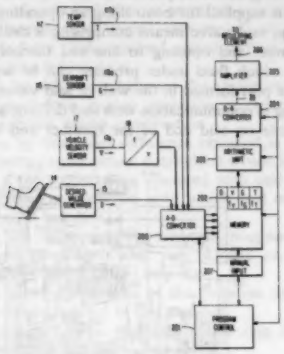
1. Device for effecting fuel conservation in an automotive vehicle having an internal combustion engine comprising

a throttle valve,

an accelerator pedal and

means controlling a transfer characteristic between the accelerator pedal and the throttle valve for effecting a progressive transfer characteristic at idling speeds wherein a large change in the accelerator pedal position effects a small change in throttle valve position which control

changes to effect an increasingly degressive transfer characteristic wherein a small change in accelerator pedal



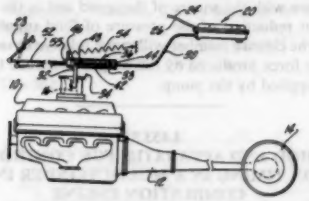
position effects a large change in throttle valve position as the vehicle velocity increases to high velocity.

4,453,517

CONTROL CIRCUIT FOR ROAD AND ENGINE SPEED GOVERNOR

Stanley J. Kasiewicz, 807 Harvest La., Bloomfield Hills, Mich. 48013

Filed Jan. 20, 1983, Ser. No. 459,346
Int. Cl.³ F02D *9/00, 1/08;* G06G *7/70;* B60K *31/00*
U.S. Cl. 123—352 **10 Claims**



1. In an engine and load speed governor for an engine having a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means, a control means including actuating means for moving said throttle closing means to a position for limiting the engine and load speeds to predetermined governed values, the improvement wherein said control means comprises:

an electronic control circuit including a microprocessor with a programmable memory and a stored program for program control of the microprocessor,

an engine speed signal generating means for producing an electrical signal corresponding to engine speed,

a load speed signal generating means for producing an electrical signal corresponding to load speed,

said actuating means including a reversible electric motor coupled with the overriding throttle closing means,

said memory being preprogrammed to store an engine speed governed value and a load speed governed value,

said microprocessor being operative under program control for determining speed values from the engine speed signal and the load speed signal and for determining whether one of said speed values is greater or less than the respective governed values,

a motor driver circuit for energizing said reversible motor and having a first control signal input for energizing the motor in one direction and a second control signal input for energizing the motor in the other direction,

said microprocessor being operative under program control to produce a wide open throttle signal on a first output and a close throttle control signal on a second output for controlling energization of the motor in the wide open throttle direction and the close throttle direction respectively, said first and second outputs of the microprocessor being connected respectively with the first and second inputs of the motor driver circuit,

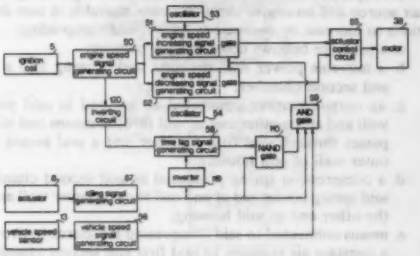
said microprocesor being operative under program control to produce each of said wide open throttle and close throttle control signals by time modulation of a DC voltage at a predetermined rate to control the energization of the motor for operation at a predetermined slow speed.

4,453,518

ENGINE SPEED CONTROL SYSTEM

Mitsuo Nakamura, Tokyo, and Fujio Matsui, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,768
Claims priority, application Japan, Dec. 24, 1980, 55-183372
Int. Cl.³ F02D *11/10;* B60K *31/00*
U.S. Cl. 123—361 **4 Claims**



1. An engine speed control system for an internal combustion engine having a throttle valve operatively connected with an actuator for actuating said throttle valve which comprises:

(a) a vehicle speed signal generating circuit for generating a vehicle speed signal only when the vehicle speed is lower than a predetermined low value;

(b) an idling signal generating circuit for generating an idling signal in the idling operation of said engine;

(c) an engine speed signal generating circuit for producing an engine speed signal dependent on the engine speed;

(d) a time lag signal generating circuit responsive to said engine speed signal and to said idling signal for producing a time lag signal;

(e) said time lag signal generating circuit being so arranged that duration of said time lag signal increases with the increase of said engine speed;

(f) a logic gate means generating a signal when applied with a signal from said vehicle speed signal generating circuit, said idling signal generating circuit, and said time lag signal generating circuit;

(g) a first comparing circuit for comparing said engine speed signal with a predetermined reference value representing when said engine speed is below a first certain level and generating an engine speed increasing signal when applied with signal from said logic gate means;

(h) a second comparing circuit for comparing said engine speed signal with a predetermined reference value representing when said engine speed is above a second certain level, above said first certain level and generating an engine speed decreasing signal when applied with a signal from said logic gate means;

(i) an actuator control circuit for operating said actuator in

opposite directions in accordance with said engine speed control signals;

whereby said throttle value is opened, closed or unmoved to perform an automatic idling speed control.

4,453,519

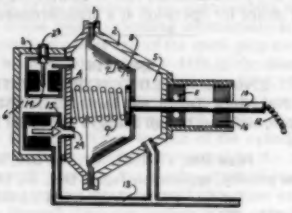
THROTTLE ACTUATOR

Fred F. Richards, Sr., 6837 Chevy Chase, Dallas, Tex. 75225

Filed Nov. 16, 1981, Ser. No. 321,905

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—378 **1 Claim**



1. A speed control device for a vehicle having a compressed air source and an engine throttle means movable in two directions to increase or decrease vehicle speed comprising:

a. a pressure bellows comprising a housing;

b. a movable power wall dividing said housing into a first and second chamber;

c. an output member connected at one end to said power wall and at the other end to said throttle means and which passes through said first chamber and a seal means in a outer wall of said housing;

d. a compression spring positional in said second chamber, said spring connected at one end to said power wall and at the other end to said housing;

e. means connected to said compressed air source to provide a constant air pressure to said first and second chambers;

f. first valve means operatively connected to selectively communicate between said second chamber and said compressed air source;

g. second valve means operatively connected to selectively communicate between said second chamber and the atmosphere;

h. control means operatively connected to said first and second valve means to activate said valve means to produce a pressure differential between said first and second chambers to move said output member so as to maintain a preselected vehicle speed.

4,453,520

LIQUID FUEL PUMPING APPARATUS

Charles T. MacFarlane, London, and Graham L. Adams, Potters Bar, both of England, assignors to Lucas Industries Limited, Birmingham, England

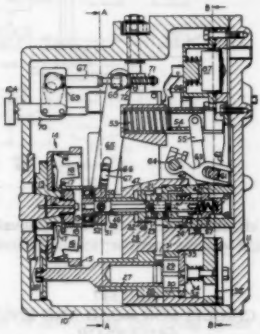
Filed Jun. 23, 1981, Ser. No. 276,683

Claims priority, application United Kingdom, Jul. 3, 1980, 8021835

Int. Cl.³ F02D *7/00*

U.S. Cl. 123—387 **9 Claims**

1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising an injection pump operable in timed relationship with an associated engine, a mechanical governor mechanism including a weight which moves outwardly as the speed of the associated engine is increased, to effect movement of an axially movable member, means responsive to the position of the member for varying the amount of fuel delivered by the injection pump whereby as the member is moved by the weight the amount of fuel supplied by the pump will be decreased, resilient means for opposing the movement of said member, valve means associated with said member for controlling a fluid pressure so that the pressure varies as the square of the speed of the associated engine and pressure responsive means to which fluid at said pressure is supplied for controlling an operating parameter of the pump, said valve means comprising a drilling formed in said member and opening to one end thereof, a restriction through which fluid under pressure can be supplied to said drilling, a port formed in the wall of said valve member, said port being in communication with said drilling, a closure member slidable on said end of the member and having a skirt



portion which can cover said port, said resilient means acting on said closure member whereby in use, the fluid pressure acting on the closure member will move the closure member relative to the valve member to partly uncover said port to control the fluid pressure in the drilling so that it varies in accordance with the square of the speed and in the event of a significant reduction of the pressure of fluid supplied to said drilling, the closure member will move relative to said member under the force produced by the weight to reduce the amount of fuel supplied by the pump.

4,453,521

METHOD AND APPARATUS FOR CONTROLLING IGNITION TIMING IN A MULTICYLINDER INTERNAL COMBUSTION ENGINE

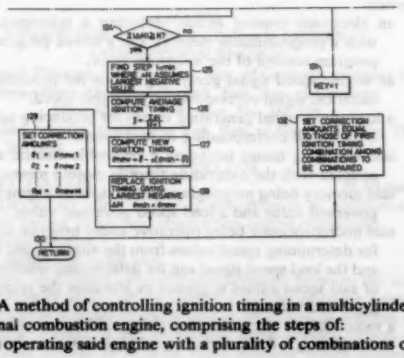
Yasuhito Takasu, Toyohashi; Shingo Inoue, Anjo, and Toshiharu Iwata, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 1, 1983, Ser. No. 481,234

Claims priority, application Japan, Apr. 2, 1982, 57-55695; Apr. 6, 1982, 57-56935

Int. Cl.³ F02B *5/04*

U.S. Cl. 123—419 **14 Claims**


FIND STEP WHERE AN ASSUMED LARGEST NEGATIVE VALUE
COMPUTE AVERAGE IGNITION TIMING
COMPUTE NEW IGNITION TIMING
REPLACE IGNITION TIMING HAVING LARGEST NEGATIVE
SET CORRECTION AMOUNTS
KEY=1
SET CORRECTION AMOUNTS EQUAL TO THOSE OF FIRST IGNITION TIMING COMBINATION AMONG COMBINATIONS TO BE COMPARED
RETURN

1. A method of controlling ignition timing in a multicylinder internal combustion engine, comprising the steps of:

(a) operating said engine with a plurality of combinations of

ignition timings of respective cylinders to derive engine output data for each combination in such a manner that said engine is operated for a predetermined period of time with each of said combinations one after another;

(b) further operating said engine with one of said combinations again for a predetermined period of time to derive further engine output data;

(c) deriving the difference between the engine output data both obtained from engine operation in twice with an identical ignition timing combination;

(d) deriving, by using said difference obtained in said step (c), imaginary engine output data which would have been obtained if the engine were operated with said identical ignition timing combination with which said engine has been operated twice;

(e) deriving the difference between each imaginary engine output data obtained in said step (d) and each engine output data obtained in said step (a);

(f) deriving a value indicative of the variation throughout the differences obtained in said step (e);

(g) comparing said value obtained in said step (f) with a predetermined value;

(h) replacing the ignition timing combination, which gives the largest negative difference or the lowest engine output in the case that all the differences are positive, with a new ignition timing combination when said value has a predetermined relationship with said predetermined value; and

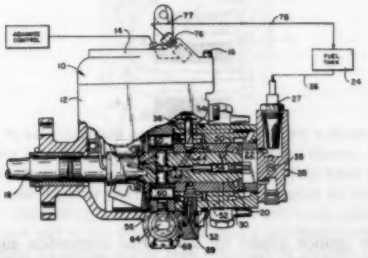
(i) determining a subsequent ignition timing by using one of said plurality of ignition timings when said value does not have said predetermined relationship with said predetermined value.

4,453,522

APPARATUS FOR ADJUSTING THE TIMING OF A FUEL INJECTION PUMP

Daniel E. Salzegber, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Apr. 28, 1980, Ser. No. 144,033
Int. Cl.³ F02M *59/20, 59/32*
U.S. Cl. 123—502 **5 Claims**



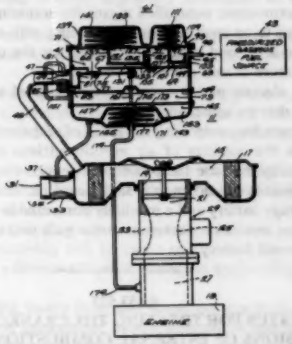
1. In a fuel injection pump having a housing, a charge pump having pumping plungers to deliver measured charges of liquid fuel in successive pumping strokes to the cylinders of an associated engine, timing means to vary the timing of the pumping strokes relative to the operation of the associated engine, and actuating means for actuating the timing means for advancing and retarding the timing of the pumping strokes in response to the operating conditions of the associated engine, said actuating means comprising a piston for actuating the timing means and having its ends exposed to fluid chambers at the opposite ends thereof, spring means engaging the piston and a fluid supplied under pressure to one chamber at one end of the piston to bias the piston in the direction to retard the timing, a source of fluid under a regulated pressure correlated with engine speed in communication with the other chamber at the other end of the piston and acting against the bias of the spring means and fluid pressure in said one chamber to advance the timing of the pumping strokes with increased engine speed, said one chamber being connected to said housing, a drainage passageway for draining fluid from the housing to control the pressure in both the housing and said one chamber, valve means between said drainage passageway and the housing for maintaining the fluid pressure in both the housing and said one chamber at a predetermined generally constant pressure and pressure dump means selectively operable to connect the housing to said drainage passageway to dump the said predetermined generally constant pressure in both the housing and said one chamber without affecting the fluid pressure in said other chamber and thereby advance the timing by a predetermined amount.

4,453,523

PRESSURE BALANCED FLOW REGULATOR FOR GASEOUS FUEL ENGINE

Arthur G. Poehlman, Oconomowoc, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 8, 1982, Ser. No. 355,914
Int. Cl.³ F02B *43/00*; F02M *21/04*
U.S. Cl. 123—527 **10 Claims**



1. A gaseous fuel and air supply system for an internal combustion engine, said system comprising an air-fuel mixing chamber, an air supply duct communicating with said mixing chamber and with the atmosphere and including sensing means for sensing pressure representative of the flow of air through said air supply duct, flow control means adapted to communicate with a source of pressurized gas, being operable between open and closed positions, and being biased toward said closed position, a fuel supply duct extending between said flow control means and said mixing chamber and including sensing means for sensing pressure representative of the flow of fuel through said fuel supply duct, and means communicating with said sensing means in said air supply duct and with said sensing means in said fuel supply duct for controlling operation of said flow control means between said open and closed positions in response to pressure sensed by said sensing means.

4,453,524

AIR CHARGER FOR INTERNAL COMBUSTION ENGINES

John K. Lee, 11909 Gainsborough Rd., Potomac, Md. 20854

Filed Oct. 21, 1982, Ser. No. 435,703
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **7 Claims**

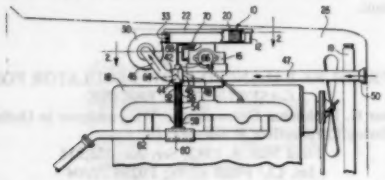
1. In an internal combustion engine having an air intake opening through which filtered air is fed to said engine, a removably mounted air filter contained in a housing having an outlet port on one side of said filter connected to said air intake opening and an inlet port on the other side of said filter, the improvement compressing an air charging system having:

(a) an air blower having a discharge opening connected to said inlet port of said air filter housing and an air supply opening,

(b) an air control valve, and an air conduit extending between said control valve and said air blower

(c) a first conduit means extending at one end to a source of air unheated by said engine and connected at the other end to a first inlet of said air control valve,

(d) a second conduit means extending at one end to a source of air heated by said engine and connected at the other end to a second inlet of said air control valve,



(e) thermostatic controlled means for actuating said control valve to connect said supply opening with either said first or said second conduit depending on the operating temperature of said engine,

(f) an electric motor operatively connected to said blower for driving same, and

(g) means for controlling the speed of said electric motor and thus the quantity of air introduced into said engine to thereby increase the power and reduce the hydrocarbon emissions of said engine, said means including an electric storage battery and a manually controllable variable resistance means connected in series with said electric motor and said battery.

4,453,525

APPARATUS FOR TREATING THE CRANKCASE VAPOR EMISSIONS OF INTERNAL COMBUSTION ENGINES

Gregory DeBruler, Seattle, Wash., assignor to Energy Innovations, Ltd., Laguna Niguel, Calif.

Filed May 7, 1982, Ser. No. 375,726
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—573 **2 Claims**

1. In an internal combustion engine of the type which has a crankcase and an air-fuel manifold wherein the improvement comprises an apparatus for increasing the efficiency of said engine and reducing the concentration of air pollutants in the exhaust gases therefrom comprising:

(a) a hollow housing having a circular side wall and bottom wall and sealed at its upper end by a header-cover member having an inlet passageway in communicable connection with the crankcase of said engine to receive crankcase emissions and blow-by gases therefrom and an outlet passageway in communicable connection with the air-fuel intake manifold of said engine, the lower portion of the housing comprising a lower sludge collection chamber;

(b) an elongated inlet conduit depending downwardly from the inlet passageway of said header-cover member and communicates at its lower end with said lower sludge collection chamber above the level of any sludge therein for passage of said emissions and blow-by gases to said collection chamber for mixing and expansion therein to separate heavy impurities therefrom with deposit of same at the bottom of said chamber;

(c) a replaceable flat circular filter assembly slidably carried by said inlet conduit and spanning said housing and mating closely at its periphery with the circular side wall of said housing, thereby defining in the lower portion of the housing said lower sludge collection chamber and defining in the upper portion of the housing an upper recycle vapor chamber, said filter assembly comprising a multiplicity of layers of wire mesh intercepting and filtering the mixture of lighter crankcase emissions and blow-by gases which have been freed of heavy impurities during expansion of said crankcase emissions in said lower sludge collection chamber and passage of said mixture upwardly toward the upper recycle vapor chamber; and

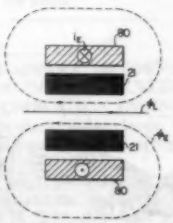
(d) an outlet conduit depending downwardly from the outlet passageway of said header-cover member and communicable at its lower end with the upper recycle vapor chamber of said housng for passage of the purified mixture of crankcase emissions and blow-by gases to the air-fuel intake manifold.

4,453,526

IGNITION SYSTEM INCLUDING IGNITION DISTRIBUTOR INTEGRATED WITH IGNITION COIL

Teruyoshi Ito, Kariya, and Shigeya Abe, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 6, 1982, Ser. No. 405,906
Claims priority, application Japan, Aug. 7, 1981, 56-123727
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—617 **3 Claims**



1. An ignition system for an internal combustion engine including an ignition distributor and an ignition coil integrated with the distributor, comprising:

a distributor proper;

a rotary shaft arranged inside of the distributor proper and rotated in synchronism with the rotation of the engine;

a signal rotor mounted on the rotary shaft;

a rotation signal generator arranged in opposed relation to said signal rotor in said distributor proper, said rotation signal generator including a magnetic flux generator and a magnetic flux change sensor having an axis extending in a radial direction of said signal rotor, for detecting change in the magnetic flux due to the rotation of said signal rotor and producing a signal in synchronism with the rotation of the engine signal generator further including an electric conductor; and

an ignition coil arranged in said distributor proper and including a primary winding and a secondary winding, a current flow through said primary winding being controlled in accordance with the output signal of said rota-

tion signal generator, a high voltage being induced in said secondary winding in accordance with the controlled current flow in said primary winding;

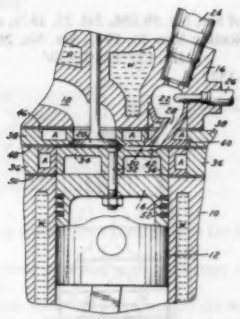
wherein said rotation signal generator further comprises an electrical conductor member arranged on the outer periphery of said magnetic flux change sensor and having a current conducting path around said axis of said sensor for producing an opposing magnetic flux when a leakage flux from said ignition coil crosses through said rotation signal generator, whereby a generation of a noise signal in said magnetic flux change sensor due to at least said leakage flux is suppressed.

4,453,527

INSULATED DIESEL ENGINE COMBUSTION CHAMBER

Wallace R. Wade, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,956
Int. Cl.³ F02B 75/08
U.S. Cl. 123—669 **1 Claim**



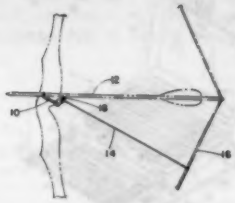
1. A heat insulated combustion chamber for a diesel engine having a cylinder block member with a bore therein slidably receiving a piston member closing one end of the bore, a cylinder head member overlying the block member to cover the same and having a recess aligned with and cooperating with the bore and piston member to define a combustion chamber, and heat insulating spacer type extenders of ceramic material of substantial thickness and of low thermal conductivity secured to each of the piston member and cylinder block member and cylinder head member and extending axially from and interacting with the same to increase axial distances between normally adjacent surfaces for reducing outflow of heat from the combustion chamber into the piston member and block member and cylinder head member, a single bolt connecting the piston extender to the piston member, the extender of the cylinder block member and piston member having equal axial extents, the extender of the cylinder head member extending in a plane normal to the cylinder bore and above that of the extenders of the piston member and cylinder block member, and air gaps within each of the extenders extending over a substantial portion of the thickness thereof between the outer surfaces of the extenders and its respective member to which it is attached to reduce the available heat flow paths from the combustion chamber.

4,453,528

ARROW REST

William Eckert, 1464 Old Bethlehem Pike, Quakertown, Pa. 18951

Filed Sep. 27, 1982, Ser. No. 424,204
Int. Cl.³ F41B 5/00
U.S. Cl. 124—41 A **10 Claims**



1. An arrow rest device for a recurve, compound or the like, archery bow comprising:

(a) a mounting bracket adjustably attachable to a bow's handle;

(b) a rod of sufficient length to transcendly span said bow's handle, said rod including a slidable connection to said bracket;

(c) a forwardly projecting arrow receiving arm pivotally attached at generally right angles to said rod, said bracket and said receiving arm mountable on opposing sides of said bow's handle;

(d) an elevation adjusting means integral with said receiving arm to control the amount of upward pivot of said arm with the same amount of draw;

(e) a spring tensioning means mounted on said rod and linked to said receiving arm to cause said arm to be normally biased in a downward pivot during an arrow's flight path; and,

(f) connecting means from said receiving arm to said bow's string, said connecting means adapted to override said spring's bias when said bow string is drawn so that said receiving arm pivots upward to provide an arrow rest,

whereby, when said bow string is released, said spring tension is relaxed returning said arrow receiving arm to its normally downward pivot, allowing said arrow's free flight.

4,453,529

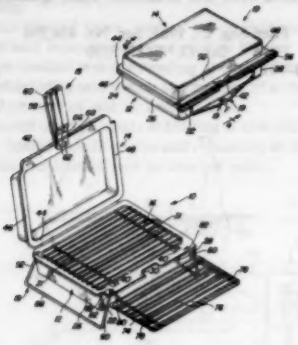
PORTABLE GRILL

Fredric J. Spencer, 306 E. 55th, Hinsdale, Ill. 60521, and Stanley P. Turek, 4439 S. Knox Ave., Chicago, Ill. 60632

Filed Feb. 17, 1983, Ser. No. 467,243
Int. Cl.³ F24J 3/02
U.S. Cl. 126—9 R **1 Claim**

1. A portable grill having a deep fire box and hood hingedly secured together, the inner surface of said hood being coated with teflon, each having rear and front and side walls, a pair of spaced foldable legs secured to said fire box and pivotally secured to said front and rear walls thereof, peripheral flanges extending outwardly of each of said fire box and hood walls, the rear wall flanges of the fire box and hood and the free end of the flanges are bent in the form of a "C" in vertical cross section, the "C" on the hood rear flange being smaller than the "C" of the flange of the fire box to readily, slidably and rotatively fit therein, a pair of handles pivotally secured medially to the front wall flange of said hood for raising and lowering said hood and in closed position to retain the fire box and hood in closed condition, said handles are positioned on and extend outwardly of said hood front wall flange and abut each other, and the flanges on the front walls of said fire box and hood extend outwardly further than the other flanges, grill rods

secured on the upper end of said fire box, said bottom of the fire box is provided with a series of equi-spaced depressions



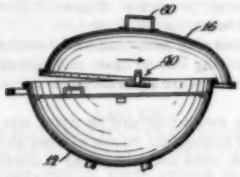
therein whereby each depression will support a charcoal briquette and each briquette will abut adjacent briquettes.

4,453,530

OUTDOOR COOKING DEVICE

Erich J. Schlosser, Lindenhurst, Ill., assignor to Weber-Stephen Products Co., Palatine, Ill.

Filed Dec. 6, 1982, Ser. No. 447,325
Int. Cl.³ F24B 3/00
U.S. Cl. 126—25 R **5 Claims**



1. A cooking vessel comprising a base portion having an open top defined by an upper edge of said base portion and a cover for said base portion, said cover having opposed generally T-shaped, support brackets, said brackets being positioned such that sliding and tilting movement of said cover with respect to said open top will cause edges of said brackets to engage said upper edge and an inner surface of said base portion to suspend said cover generally perpendicular to said upper edge.

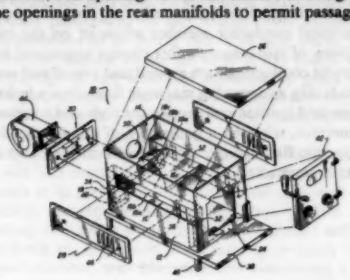
4,453,531

WOODBURNING STOVE

George D. Field, Field Dr., Pelham, N.H. 03076

Filed Mar. 28, 1983, Ser. No. 479,202
Int. Cl.³ F24B 3/00
U.S. Cl. 126—61 **6 Claims**

1. A wood burning stove comprising top and bottom portions, a front panel, unitary metal side panels having inwardly extending manifold sections running from the rear of the stove towards the front, each said manifold section being formed by bending the metal to form a channel which lies wholly inwardly of the outer plane of each such panel, a unitary rear panel having an inwardly extending manifold section across the rear of the stove, the side manifolds being substantially horizontal and extending from the front to the rear of the stove, the rear end of said side manifold being closed by the rear panel, the front end of said side manifold being closed by the front panel, the rear manifold extending from one side of the stove to the other, the ends of said rear manifold being closed by said two side panels, an opening in the rear portion of each of said side manifold, an opening in each end of said rear manifold, said openings in the side manifolds being aligned with the openings in the rear manifolds to permit passage of air



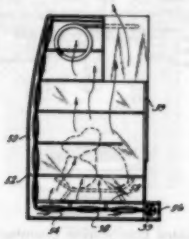
from the rear manifold to the side manifold, a cover plate for each side manifold having hot air exit openings, a cover plate for the rear manifold having a cold air inlet opening, a blower mounted for forcing air into said rear manifold and out through the covers on said side manifolds.

4,453,532

WATER HEATER FOR USE IN FIREPLACE

Fritz Lindblom, Jr., 733 El Rancho Rd., Santa Barbara, Calif. 93108

Continuation of Ser. No. 59,686, Jul. 23, 1979, abandoned. This application May 14, 1981, Ser. No. 263,485
Int. Cl.³ F24B 9/04
U.S. Cl. 126—132 **4 Claims**



1. A water heater for use in a fireplace of the type including a back wall and side walls extending upwardly from a floor plane to define a space for a fire, and including a front wall spaced from the floor plane and merging with the back wall and side walls to form a flue above the fire into which rising smoke and hot gases are drawn by a draft, said water heater comprising in combination:

a heat exchanger having a wall including a passage for water, the wall being inclined to the floor plane and so positioned within the fireplace that a first side of the wall faces the fire while a second side of the wall faces away from the fire, said heat exchanger further including a floor portion extending substantially parallel to the floor plane of the fireplace and having a passage communicating with the passage of the wall of said heat exchanger;

a plenum extending beneath said floor portion;

a heat trap having a top wall spaced vertically above said heat exchanger, a short wall depending from the top wall below the top of the wall of said heat exchanger and in front of the upper portion of the first side of the wall of the heat exchanger into the space above the fire so that some of the smoke and hot gases rise into the space between the short wall and said heat exchanger, and further including

long walls depending from the top wall to form a skirt partially surrounding and spaced from those portions of the wall of said heat exchanger not facing the fire, said skirt extending downwardly to said plenum;

said plenum opening into the space between said skirt and said exchanger, and opening into the space for the fire above said floor portion; and,

fan means associated with said plenum for drawing the smoke and hot gases, that have risen from the fire into said heat trap, over the top of the wall of said heat exchanger and downwardly along the second side of the wall of said heat exchanger thereby imparting heat to the second side of the wall of said heat exchanger, for drawing into the plenum smoke and hot gases from the space between said skirt and said heat exchanger and for driving the smoke and hot gases drawn into the plenum into the space above the floor portion.

4,453,533

FRAME FOR PLATES OF GLASS, VITREOUS CERAMIC OR SIMILAR MATERIAL, PARTICULARLY FOR COOKER HOBS

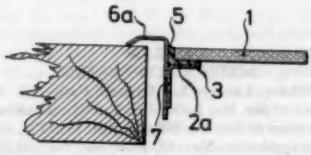
Herwig Scheidler, Mainz-Finthen, Fed. Rep. of Germany, and Günther Keller, Vols/Innsbruck, Austria, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,354

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104114

Int. Cl.³ F24C *15/10*; H05B *3/68*

U.S. Cl. 126—211 **1 Claim**



1. A mounting system for a glass plate or the like, the system comprising:

a mounting frame attached to the periphery of an underside of the plate;

a sealing frame removably fastened to the mounting frame and adapted to support the mounted plate in substantially coplanar relation with an adjacent counter surface;

a continuous elastic member having a first section thereof positioned between the sealing frame and a confronting edge of the plate for creating a seal therebetween, a second section of the elastic member permanently bonded between the mounting frame and the periphery of the plate underside; and

means for unfastening the sealing and mounting frames thus permitting disengagement therebetween and removal of the sealing frame without damage to the elastic member.

4,453,534

SOLAR WATER HEATING SYSTEM

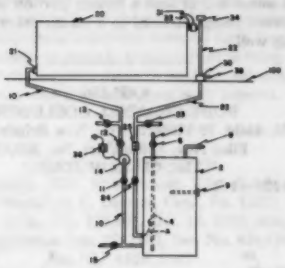
Donald J. Kazimir, North Palm Beach, Fla., assignor to Solar Development, Inc., Riviera Beach, Fla.

Filed Jul. 8, 1982, Ser. No. 396,227

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—420 **4 Claims**

1. In a pressurized solar water heating system; a water storage tank; first conduit means for connecting a pressurized water supply to the lower part of said tank; a solar panel having an inlet and an outlet; second conduit means connecting the lower part of said water storage tank to the inlet of said solar panel for delivering water thereto; third conduit means connecting the outlet of said solar panel to the lower part of said water storage tank for returning water thereto; said solar panel being located in an area where freezing temperatures can be encountered; pump means in said second conduit means for circulating water from a first location in the lower part of said water storage tank through said second conduit means, said solar panel, and said third conduit means back into the lower part of said water storage tank at a second location spaced from said first point; means for turning said pump on and off; said third conduit means having a thermally operated freeze valve; said thermally operated freeze valve being set to open at a predetermined temperature to prevent the freezing of said



solar panel when said pump is off by bleeding water from said third conduit means to maintain a flow of water under pressure of water in said water storage tank through said second conduit means, said solar panel, and the portion of said third conduit means between said solar panel and said thermally operated freeze valve; a one-way check valve located in said third conduit means between said thermally operated freeze valve and said water storage tank prevents flow through the portion of said third conduit means between said water storage tank and thermally operated freeze valve toward said freeze valve.

4,453,535

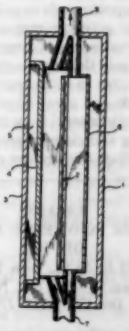
SOLAR ENERGY STRUCTURE

William J. Tolonen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 6, 1981, Ser. No. 318,776

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—444 **2 Claims**



1. A solar collector structure comprising a sandwich comprised of two transparent plates having therebetween a black body heat absorbing film wherein said sandwich is housed within said structure having means adapted to pass heat collecting or transfer medium substantially over the entire outside surface of said sandwich and wherein there is provided as one wall of said structure a conduit for passing said heat transfer or collecting medium in contact with the outside surface of said

sandwich and a transparent film which permits the sun's rays to enter into said structure and to pass through said medium to said sandwich and wherein there is disposed for at least a portion of said conduit to the side of said sandwich facing away from the sun reflecting wall to reflect heat back into said collecting medium, said solar collector structure further including first and second front walls comprising a dead air space, inlet means at one end of said housing which divides into two flow paths for allowing fluid flow behind and in front of the sandwich structure, outlet means for withdrawing fluid from said housing, at least a portion of said inlet and outlet means being attached to a means extending from said dead air space chamber and at least a further portion of said inlet and outlet means being attached to a means extending from said reflecting wall.

4,453,536

BODY CHANNEL OCCLUDER

Robert N. Ahlid, 79 Vibberts Ave., New Britain, Conn. 06051

Filed Nov. 3, 1980, Ser. No. 203,438

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—1 R **28 Claims**

1. An improved apparatus for controlling the flow of body fluids through a channel, said apparatus being implantable within the body of a user, said apparatus comprising:

clamp means for occluding flow through a body channel, said clamp means having at least a first stationary arm and a movable arm, the channel through which flow is to be controlled being positionable between said stationary and movable arms;

actuator means, said actuator means being implantable within a muscular wall of the user's body with a portion thereof being positioned under the user's skin;

elongated connector means, said connector means having an aperture extending lengthwise therethrough, said connector means including an elongated flexible member positioned within said aperture, said flexible member being attached at its opposite ends to said clamp means movable arm and to said actuator means, said flexible member being axially movable in said aperture by operation of said actuator means, said flexible member acting on said clamp means movable arm so as to spatially displace said movable arm towards and away from said stationary arm to thereby selectively control flow through the channel; and

means for adjusting said clamp means in position in the body of the user to adjust the amount of occlusion.

4,453,537

APPARATUS FOR POWERING A BODY IMPLANT DEVICE

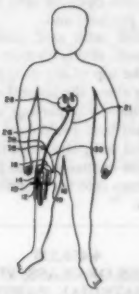
Daniel E. Spitzer, 435 E. 30 St., New York, N.Y. 10016

Filed Aug. 4, 1981, Ser. No. 290,105

Int. Cl.³ A61F *1/00*

U.S. Cl. 128—1 D **20 Claims**

1. A device comprising in combination a body implant device and an apparatus for powering said body implant device; said device comprising a reservoir; said reservoir being implantable in the body adjacent to at least one muscle; a fluid disposed within said reservoir; a pressure actuated body implant device; a conduit connecting said reservoir to said body implant device and providing a fluid connection between said reservoir and body implant device; means for periodically stimulating said at least one body muscle from a relaxed state to a contracted state for periodically contracting said at least one body muscle against said reservoir to pressurize said fluid to cause it to flow from said reservoir toward said body implant device; said body implant device including means responsive



to said pressurized fluid for powering said body implant device; upon relaxation of said at least one muscle said reservoir returning to its original unpressurized state, thereby creating a vacuum so as to cause the return of said fluid thereto.

4,453,538

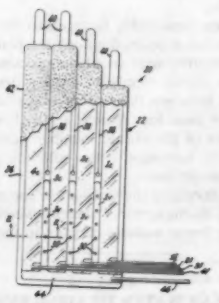
MEDICAL APPARATUS

John K. Whitney, Lenneys La., Orchard Park, N.Y. 14210

Continuation of Ser. No. 1,404, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 785,408, Apr. 17, 1977, abandoned. This application Nov. 18, 1980, Ser. No. 208,003

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 R **20 Claims**

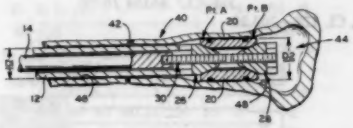


1. An apparatus for the alleviation of operative and post operative deep venous thrombosis comprising a flexible pad formed for external enwrappment about a mammalian limb, said pad comprising: a first plurality of relatively large, individual fluid receiving cells, said first cells being formed to receive and hold sufficient fluid to exert pressure upon said limb for a given period of time and to subsequently release said fluid; a second plurality of relatively smaller cells arrayed alternately with said first plurality of cells, said second plurality of cells being formed to receive and continuously release a supply of ventilating fluid; and means for supplying said fluid to said cells.

4,453,539
EXPANDABLE INTRAMEDULLARY NAIL FOR THE FIXATION OF BONE FRACTURES

Demetrios D. Raftopoulos; James D. Baril, and Glenn Reimer, all of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Filed Mar. 1, 1982, Ser. No. 353,511
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 BC 6 Claims



1. A fixation device for insertion into a medullary cavity of a bone comprising:

an elongate member defining a longitudinal axis and having one end adapted to be inserted within the medullary cavity of the bone, said one end having a predetermined maximum diameter to permit insertion of said one end within the bone cavity;

a plurality of circumferentially spaced, radially expandable elements carried by said one end of said member, said elements being radially movable from a first, retracted position wherein said elements define a first diameter to a second, expanded position wherein said elements define a second diameter greater than said predetermined maximum diameter and said first diameter, each of said elements including a radially outermost portion adapted to engage the inner wall of the bone cavity, said radially outermost portions of said elements in said second position providing at least two spaced apart support points at said second diameter and located along an axis generally parallel to the longitudinal axis of said elongate member, said radially outermost portions of said elements providing said support points being maintained at a generally equal spacing from the longitudinal axis of said elongate members as said elements are moved from said first position to said second position;

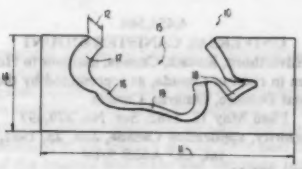
means carried by said elongate member for moving said elements from said first position to said second position; and

actuator means located at the other end of said elongate member and coupled to operate said moving means for controlling the radial position of said elements.

4,453,540
POSITIONING STRUCTURE FOR HANDICAPPED PERSON

Joan M. Frain, Arlington, Va., assignor to D.C. Society for Crippled Children, Inc., Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 430,958
Int. Cl.³ A61F 13/00
U.S. Cl. 128—134 4 Claims



1. Custodial protective structure for handling and therapeutic purposes for an individual subject to involuntary reflex responses, such as extensor thrust, comprising

an elongated resiliently yieldable body support,

such body support having a longitudinal axis and a centrally-located transverse axis, and defining a flexible body mold cavity which provides relaxed positioning over the full length of the body of an individual within such body support, such defined body cavity including

a transverse concave portion for minimizing shoulder retraction,

such concave portion being located for contact across the back at shoulder level of an individual within such defined body cavity, and

stabilizing means for such body support including

longitudinal end wall means for restraining and limiting longitudinal expansion of the defined body cavity,

lateral support means extending between such longitudinal end wall means to prevent asymmetrical twisting of such yieldable body support about its longitudinal axis, and

bottom support wall means for such body support.

4,453,541
ATHLETIC SUPPORTER

Joseph T. Castelli, 2415 Willowbrook Rd., Pittsburgh, Pa. 15241, and Maccalleen C. Desmet, Cecil, Pa. 15321

Continuation of Ser. No. 196,607, Oct. 14, 1980, abandoned.
This application Sep. 27, 1982, Ser. No. 424,424
Int. Cl.³ A61F 5/40
U.S. Cl. 128—158 5 Claims

1. A multi-purpose protective athletic support garment for use with and without a protective cup comprising,

an elastic waistband,

a pair of leg straps having upper end portions secured to said waistband, said pair of leg straps having lower end portions,

an inner layer of elastic material connected at one end to said lower end portions of said leg straps and at the opposite end to said waistband,

an outer layer of elastic material positioned in overlying relationship with said inner layer of elastic material,

said outer layer of elastic material connected at one end to said lower end portions of said leg straps,

said inner layer and said outer layer having lateral edges positioned in overlying relation, said lateral edges being connected to each other,

said outer layer having an upper edge positioned in overlying abutting relation with said waistband to form a pouch,

said pouch being positioned in contact with the groin region of a wearer's body to provide protection for the groin region,

a protective cup removably insertable in said pouch to provide the wearer with additional groin protection,

an elastic pouch closure strap having opposite end portions and an intermediate portion therebetween,

said closure strap end portions being secured to said waistband,

said closure strap intermediate portion being secured to said outer layer upper edge to support said pouch from said waistband,

said closure strap intermediate portion positioned in overlying abutting relation with said waistband for movement relative to said waistband to close said pouch,

said pouch having an upper end portion at said waistband

and a closed end portion at the connection of said inner and outer layers to the opposite ends of said straps,

said pouch closure strap and said outer layer upper edge being movable into and out of abutting relation with said waistband from a first position closing said pouch by abutting contact of said pouch closure strap intermediate portion with said waistband to retain said protective cup in said pouch to a second position permitting access into said pouch by displacement of said pouch closure strap intermediate portion from contact with said waistband to insert and remove said protective cup for use of said pouch to provide groin protection with and without said protective cup in said pouch, and

said pouch closure strap being stretched upon expansion of said waistband around the waist of a wearer to move into abutting relation with said waistband to close said pouch upper end portion so that said pouch is self-locking by expansion of said waistband with and without said protective cup being positioned in said pouch.

4,453,542

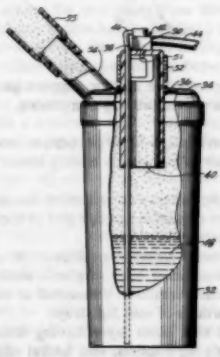
VORTEX-GENERATING MEDICAL PRODUCTS

Nathaniel Hughes, Palm Springs, Calif., assignor to Vortran Corporation, Beverly Hills, Calif.

Filed Dec. 8, 1980, Ser. No. 213,843

Int. Cl.³ A61M *11/02*; B05B *17/06*

U.S. Cl. 128—200.21 **1 Claim**



1. A nebulizer for medical purposes comprising:

a liquid storage container;

a cylindrical chamber mounted on the container, the chamber having a closed end outside the container and an open end inside the container;

a vortex generating transducer having a gas inlet, a liquid inlet, and an outlet;

means for mounting the transducer on the closed end of the chamber such that the outlet is directed towards the open end of the chamber;

window means in the side of the chamber near its closed end opening the interior of the chamber to the outside of the container;

a tube connecting the bottom of the container to the liquid inlet;

a source of gas under pressure connected to the gas inlet; and

an exit from the container outside the chamber.

4,453,543

ANAESTHESIA—BREATHING APPARATUS

Ole B. Kohnke, Vattholma, Sweden, and Henning Ruben, Skodsborg, Denmark, assignors to Testa-Laboratorium A/S, Copenhagen, Denmark

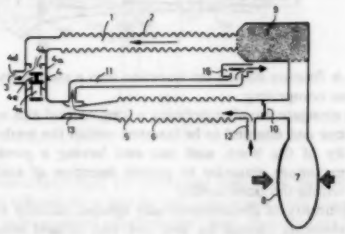
PCT No. PCT/SE81/00243, 371 Date Apr. 20, 1982, 102(e) Date Apr. 20, 1982, PCT Pub. No. WO82/00766, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 31, 1981, Ser. No. 373,509

Claims priority, application Sweden, Sep. 1, 1980, 8006085

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—203.28 **8 Claims**



1. Anaesthesia-breathing apparatus for supplying gas to a patient, comprising:

a first gas chamber having first and second ends;

a second gas chamber having first and second ends, the first end of said second gas chamber being in the form of a convergent-divergent duct and the second end of said second gas chamber having an aperture therein for introducing fresh gas from a pressurized source, said second gas chamber holding a volume of gas which is at least equal to the volume of gas exhaled by a mature person which has been in contact with the lung alveoli;

a side duct coupled to said second gas chamber at the most restricted portion of said convergent-divergent duct, said side duct being provided with a first check valve for discharging excess gas to the atmosphere;

a patient connecting piece;

a control valve coupled to the first ends of said first and second gas chambers and to said patient connecting piece, said valve alternately conducting gas exhaled by said patient through said connecting piece to said second gas chamber or conducting a mixture of exhaled gas and fresh gas from said first gas chamber to said connecting piece, said control valve blocking the flow of exhaled gas into said second gas chamber when said gas mixture is being conducted to said connecting piece from said first gas chamber;

a respirator gas receptacle connected to the second ends of said first and second gas chambers; and

a second check valve positioned in said second gas chamber between said aperture for introducing fresh gas and said respirator gas receptacle, said second check valve opening toward said respirator gas receptacle.

4,453,544

UNIVERSAL CANISTER MOUNT

Gideon C. Silverthorn, Kanata, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ontario, Canada

Filed May 18, 1982, Ser. No. 379,497

Claims priority, application Canada, Jun. 25, 1981, 380596

Int. Cl.³ A62B *9/04*

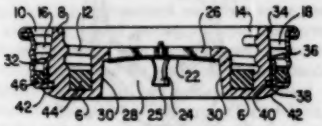
U.S. Cl. 128—206.17 **6 Claims**

1. A multiple canister mount, for receiving at different times different sized bolt connectors of canisters, comprising:

a base;

a pair of spaced inner and outer annular rims rigidly secured

to and upwardly projecting from the base and each having inner and outer walls, the inner wall of each rim being threaded with threads of appropriate form, and being of a diameter so as to receive a canister bolt connector of particular size and particular thread form, the outer rim being formed of metal and the base and inner rim of integral plastic construction, the outer rim having a base, the base of said outer rim having an annular flange which extends upwardly and inwardly from the base of said



outer rim, said outer rim being clipped securely to the inner rim and the base of said mount by means of said annular flange, the annular flange inwardly bearing against the outer wall of the inner rim;

sealing means provided between the annular flange and the outer wall of the inner rim to prevent passage of air therebetween; and

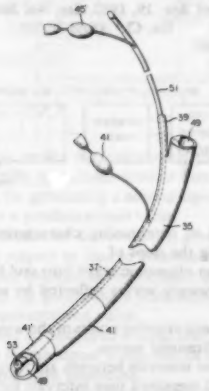
a centrally disposed valve opening in the base of said mount and a valve seat secured to the base of said mount around said valve opening.

4,453,545

ENDOTRACHEAL TUBE WITH MOVABLE ENDOBRONCHIAL BLOCKER FOR ONE-LUNG ANESTHESIA

Hiroshi Inoue, No. 15-20, Shiratori 1-chome, Tama-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Apr. 29, 1982, Ser. No. 373,311
Claims priority, application Japan, May 7, 1981, 56-68698
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—207.15 **13 Claims**



1. An apparatus adapted to be used for carrying out one-lung anesthesia, comprising:

an elongated endotracheal tube adapted to be inserted into a human trachea and having a forward end, a rear end and a length sufficient to allow the forward end of said tube to be positioned in the trachea at a location near the bifurcation of the trachea into right and left main bronchi; said tube having wall means and an inner surface, the inner surface of said tube defining an internal central lumen extending lengthwise within said tube, said wall means defining an elongated channel which extends in the lengthwise direction of said tube for almost the entire length of said tube, the axis of said channel being offset radially outwardly from the central axis of said tube and being smaller in cross sectional area than said lumen;

a first inflatable cuff mounted on the outer periphery of said tube near the forward end thereof, said first cuff being adapted upon inflation thereof to expand into substantial sealing contact with the inner surface of the trachea near the bifurcation thereof; and

an endobronchial blocker comprising an elongated catheter which is received in said channel for longitudinal sliding movement therein, said catheter having a forward end and at least one duct extending lengthwise therein, and a second inflatable cuff mounted on the outer periphery of said catheter near the forward end thereof, said duct being in communication with said second cuff so that said second cuff can be inflated by gas supplied through said duct, said second cuff being longitudinally slidably receivable within the forward end of said endotracheal tube so that after said endotracheal tube has been inserted into the trachea near the bifurcation thereof, the forward end of said endobronchial blocker can be slidably extended from the forward end of said endotracheal tube into a main bronchus following which said second cuff can be inflated into substantial sealing contact with the inner surface of said main bronchus.

4,453,546

SCLERAL DEPRESSOR

Norman N. K. Katz, Beltsville, and Vincent A. Przybyla, Jr., Huntingtown, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 27, 1982, Ser. No. 423,575
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **6 Claims**

1. A scleral depressor for controlling eye position comprising:

a planar blade with a textured, non-smooth, uneven, pimply, roughened surface, formed with a hole and having a handle means adapted for pressing said surface against only the sclera of said eye to control eye position, and

said handle means having an axis lying substantially in the plane of said blade, attached to said blade and angled therefrom at an angle between 145 degrees and 175 degrees.

4,453,547

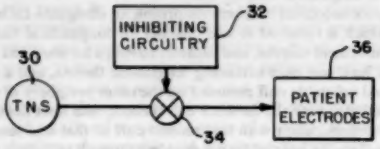
T-WAVE INHIBITING SYSTEM

John C. Castel, Lake Bluff, and Richard G. Kerwin, Prospect Heights, both of Ill., assignors to Physio Technology, Inc., Topeka, Kans.

Filed Apr. 6, 1981, Ser. No. 251,139
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421 **8 Claims**

1. A transcutaneous nerve stimulating and inhibiting system comprising:

means for providing a series of electrical pulses;
sensing means for detecting a period of the heartbeat of an individual and providing a sensing signal;
timing means responsive to said sensing signal for providing a timing signal of predetermined duration following detection of said heartbeat period;



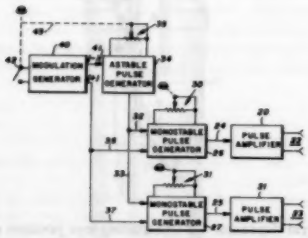
means coupled to receive said pulses and said timing signal for providing an output of said pulses which is suppressed only during the presence of said timing signal; and
means for coupling said output pulses to the body of an individual.

4,453,548

METHOD OF IMPROVING SENSORY TOLERANCE WITH MODULATED NERVE STIMULATOR

Donald D. Maurer, Anoka; David E. Swift, Bethel, and Zosim Ioffe, St. Paul, all of Minn., assignors to Empi, Inc., Fridley, Minn.

Continuation-in-part of Ser. No. 271,258, Jun. 8, 1981, Pat. No. 4,431,002. This application May 2, 1983, Ser. No. 490,361
Int. Cl.³ A61N *1/32*
U.S. Cl. 128—421 **13 Claims**



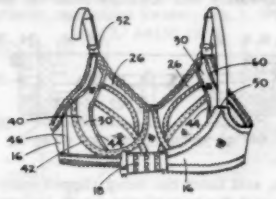
1. A method of electrically stimulating a patient by controlling the average energy in a train of electrical pulses within a range tolerable to the patient to stimulate deep afferent nerves and cause the release of opiates to suppress pain in the patient comprising: supplying a train of electrical pulses at a repetition rate, selectively increasing and decreasing the repetitive rate of said electrical pulses, varying the pulse rate range, pulse width and pulse amplitude of said electrical pulses over a predetermined range simultaneously with an increase or decrease in the repetitive rate of said electrical pulses, said width and amplitude of said electrical pulses being decreased when the repetitive rate of said electrical pulses is increased and said width and amplitude of said electrical pulses being increased when the repetitive rate of said electrical pulses is decreased, cyclically altering the limits of said range of pulse widths and amplitudes, cyclically altering the repetitive rate of said electrical pulses between first and second values, and applying said electrical pulses to a patient at levels sufficient to stimulate deep afferent nerves and cause the release of opiates to suppress pain.

4,453,549

BRASSIERE

Flavia DiTullio, New York, N.Y., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed Jan. 9, 1984, Ser. No. 569,410
Int. Cl.³ A41C *3/00*
U.S. Cl. 128—498 **7 Claims**



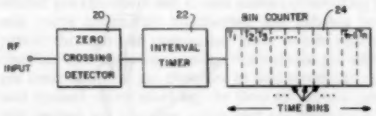
1. In a brassiere construction, a pair of breast receiving cups, a pair of back band portions, means joining said cups and said back band portions, and a pair of shoulder strap means, each shoulder strap means being connected to an adjacent breast receiving cup and to an adjacent back band portion, each of said breast-receiving cups including an outer fabric panel means and an inner fabric segment selectively secured to said outer fabric panel means, said inner segment extending downwardly from the juncture of the cup with a shoulder strap means and about the outer side portions of said fabric panel means, said segment serving to distribute stress equally along the cup for reshaping the breast while avoiding distortion and misshaping of said outer fabric panel means.

4,453,550

METHOD AND MEANS FOR DETECTING A PERIODIC WAVE STRUCTURE

Stephen W. Flax, Waukesha, Wis., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Apr. 19, 1982, Ser. No. 369,369
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **4 Claims**



1. A method of determining characteristics of biological tissue comprising the steps of
transmitting an ultrasonic wave into said biological tissue,
detecting ultrasonic waves reflected by said biological tissue,
determining zero crossing points of the wave structure of the reflected ultrasonic waves,
measuring time intervals between zero crossings, and
analyzing said measured time intervals for uniformity.

4,453,551

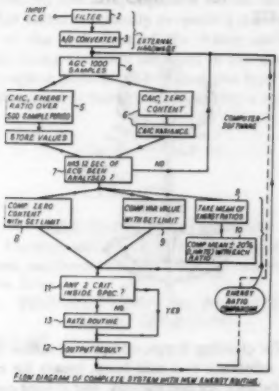
APPARATUS FOR PATTERN RECOGNITION OF ECG SIGNALS FOR DETECTING FIBRILLATION

John Anderson, 16 Tor Grange, Carlston Ave., Holywood; Co.-Down, and David Weir, 2, Lynda Ave., Jordenstown, Newtown Abbey, both of Ireland

Filed Feb. 25, 1981, Ser. No. 237,984
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—704 **15 Claims**

1. Pattern recognition apparatus comprising a pair of electrodes for connection to the body of a patient to receive an

electric signal fluctuating about an isoelectric line, a filter for attenuating signals having a frequency below 3 Hz and above 18 Hz having an input connected to the electrodes and an output, sampling and converting means having an input connected to the output of the filter for taking samples of the filtered signals at intervals and converting the magnitudes of the samples from analogue to digital form, and an output, automatic gain control means having an input connected to the output of the sampling and converting means responsive to the digitised samples for standardising the magnitudes of the digitised samples to a predetermined maximum value, and an output and analyzing means having an input connected to the output of the automatic gain control means for receiving the standardised samples and for analyzing the standardised samples to detect an abnormal physiological condition, said analyzing means comprising totalling means for totalling the magnitudes of the samples respectively above and below the isoelectric line for successive batches of samples, for calculating the ratios of the totals so obtained, for calculating the mean of the ratios, for calculating the proportion of the ratios which are within predetermined limits above and below the mean and for generating a first signal if this proportion is below a predetermined value,



FLOW DIAGRAM OF COMPLETE SYSTEM WITH NEW ENERGY ROUTINE

zero proportion means for calculating the proportion of samples of zero magnitude from a batch of successive samples and for generating a second signal if this proportion is below a predetermined value,

differentiation means for differentiating groups of samples in a batch with respect to time to determine the gradients of each group, for calculating the variance of the gradients in the batch and for generating a third signal if the variance exceeds a predetermined value,

means responsive to said first, second and third signals for generating a fourth signal if any two of said first, second and third signals are generated,

and means responsive to said fourth signal for differentiating a group of successive samples in a batch with respect to time, for calculating the greatest negative slope obtained as a reference value, for differentiating subsequent groups of the batch, for calculating the time intervals between successive negative slopes which are between predetermined slope limits above and below said reference value, for calculating the mean of said time intervals, for calculating the proportion of intervals within predetermined time limits above and below said mean and for generating a fifth signal indicating an abnormal condition if said proportion is below a predetermined value,

4,453,552

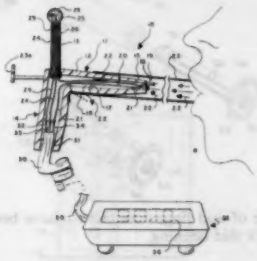
ELECTRONIC BODY TEMPERATURE INDICATOR

John D. Ensign, 750 S. Main St., Brigham City, Utah 84302

Filed Jun. 22, 1981, Ser. No. 276,049

Int. Cl.³ A61B *5/00*; G01K *7/12*; A61M *16/00*

U.S. Cl. 128—736 **17 Claims**



1. A body temperature indicator, comprising:

thermocouple means having a hot junction and a cold junction;

means for positioning the hot junction so that the exhaled breath of a patient flows thereover in direct contact therewith, said means comprising tubular means having a central passage therethrough, the hot junction positioned within said central passage, said tubular means having an open end for the patient to expel breath into the passage, and breath outlet orifice means, so that the breath flows through the passage about the hot junction in direct contact therewith; and air flow check valve means at the outlet orifice means, for preventing the patient from inhaling through the passage of the tubular means;

means for positioning the cold junction in direct contact with the ambient air remotely from the breath of the patient;

ambient air temperature sensing means adjacent the cold junction; and

means for indicating the temperature utilizing electrical input from said thermocouple means and said ambient air temperature sensing means.

4,453,553

TREATMENT OF CIGARETTE PAPER

Charles C. Cohn, 123 S. New Hampshire Ave., Atlantic City, N.J. 08401

Continuation-in-part of Ser. No. 460,423, Jan. 24, 1983, abandoned. This application Mar. 10, 1983, Ser. No. 473,934

Int. Cl.³ A24B *15/28*

U.S. Cl. 131—365 **13 Claims**

1. A cigarette comprising a charge of tobacco in a wrapper of cigarette paper having a Greiner porosity of at least about 50 seconds and a weight between about 10 and 35 grams per square meter, said paper being substantially free of burn accelerator other than filler and having a filler content in the range of approximately 15 to 22 percent.

4,453,554

HAIR CURLER

Richard Caruso, 7801 Montgomery Ave., Elkins Park, Pa. 19117

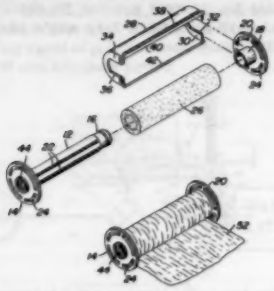
Filed Feb. 7, 1983, Ser. No. 464,538

Int. Cl.³ A45D *2/02*

U.S. Cl. 132—39 **14 Claims**

1. A hair curler for use with steam comprising a hollow perforated core, said core having an opening only at one end, a purous sleeve around said core, a rim at each end of the core, the diameter of the rim being greater than the diameter of the

core, at least one rim being releasably connected to the core, and a finger contact surface on the exterior surface of each rim,



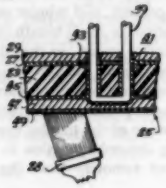
at least one of said finger contact surfaces being annular and coaxial with said opening.

4,453,555

HAIRPIECE FOUNDATION AND METHOD OF MAKING SAME

Paul V. Finamore, Chicago, Ill., assignor to Hairline Creations, Inc., Chicago, Ill.

Filed Aug. 23, 1982, Ser. No. 410,421
Int. Cl.³ A41G 3/00
U.S. Cl. 132—53 **13 Claims**



1. A hairpiece foundation comprising: (a) a first sheet member of predetermined curvature; (b) a first adhesive bondable to said first sheet member; (c) a first coating having an effective amount of surface adaptations for providing said hairpiece foundation with an appearance of naturally-formed skin pores, said first coating being bonded to said first sheet member by said first adhesive; (d) a second adhesive bonded to said first sheet member; (e) a second coating bonded to said second adhesive; (f) a third adhesive bondable to said second coating, said third adhesive including an effective amount of molecular sieves for moisture control thereof; and (g) a second sheet member bonded to said second coating by said third adhesive, the foundation being translucent and having a natural appearance, said third adhesive being elevatable to a predetermined temperature above room temperature for releasing said second sheet member from said second coating.

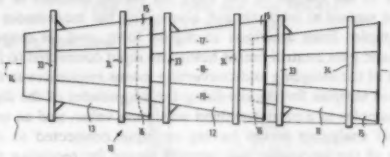
4,453,556

SPRAY TREATMENT APPARATUS

Sydney C. Corbett, Birmingham, England, assignor to Hoklykem Holdings Limited, Birmingham, England

Filed Jan. 5, 1982, Ser. No. 337,124
Claims priority, application United Kingdom, Jan. 20, 1981, 8101673
Int. Cl.³ B08B 3/02
U.S. Cl. 134—65 **8 Claims**

8. Spray treatment apparatus for small workpieces the apparatus comprising a frame, at least one container rotatably mounted on the frame about a generally horizontal rotational axis, the container having an intake end and an output end and a generally helical feed means extending along the interior of the container from the intake end to the output end so as to feed workpieces along the container on rotation thereof about its axis, the container tapering inwardly towards the axis in a direction from the intake to the output end of the container, the container comprising a plurality of substantially flat wall panels and being of polygonal cross-section in planes perpendicular to its axis, and the helical feed means comprising a plurality of generally flat strips secured rigidly to the respective wall panels of the container.

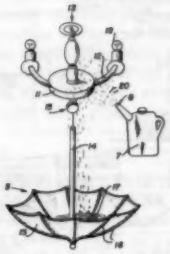


4,453,557

DEVICE FOR CLEANING LAMPS

Francisco M. Moreno, Madrid, Spain, assignor to Paco Moreno, S.A., Madrid, Spain

Filed Oct. 21, 1982, Ser. No. 435,650
Claims priority, application Spain, Apr. 2, 1982, 264.353[U]
Int. Cl.³ B08B 3/02
U.S. Cl. 134—172 **5 Claims**



1. A device for cleaning lamps, comprising means for applying a cleaning substance to a said lamp, means for collecting the cleaning substance applied thereby, and at least one protective element for preventing the cleaning substance from reaching specific parts of a said lamp to be cleaned, said applying means consisting of a container provided with spray dispensing means, and said collecting means consisting of a waterproof concave folding screen provided with means for suspending it from a said lamp to be cleaned.

4,453,558

PREFABRICATED KNOCK-DOWN AWNING FRAME FOR PACKAGED SHIPMENT

George K. Ochs, Arcadia, and John R. Eide, Brea, both of Calif., assignors to Eide Industries, Inc., Los Angeles, Calif.

Filed Apr. 8, 1982, Ser. No. 366,487
Int. Cl.³ A45F 1/16
U.S. Cl. 135—106 **4 Claims**

1. A knock-down awning frame comprised of a prefabricated complement of frame members and including:

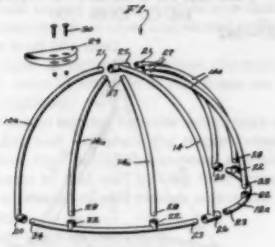
an arcuate wall bar frame member for each side of a frame assembly and to be engageably supported by a vertical structure and each having inwardly projecting male coupling portions at its top end and a right angular open female coupling part at its bottom end,

an arcuate bottom bar frame member for each side of said frame assembly and to be disposed in a horizontal bottom plane and each having inwardly and outwardly projecting male coupling portions and the outwardly projecting male

coupling portion being slideably received in the open female coupling part at the bottom end of a wall bar,

and at least one arcuate bow bar frame member disposed in a vertical plane between the top ends of the wall bars and inner ends of the bottom bars and having oppositely opening female coupling parts right angularly at its top and bottom ends, the inwardly projecting male coupling portions of the bottom bars of each side of the frame assembly formed thereby being slideably received in the open female bottom end coupling parts of the said at least one bow bar and the inwardly projecting male coupling portions of the wall bars of the frame assembly formed thereby being slideably received in the open female top end coupling parts of said at least one bow bar,

the frame assembly being held secure by a cover.

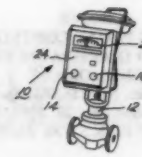


4,453,559

PNEUMATIC CONTROLLER

Gerald F. Varnum, and David E. Wiklund, both of Marshalltown, Iowa, assignors to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Oct. 19, 1981, Ser. No. 312,930
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **12 Claims**



1. A pneumatic controller for controlling a process variable comprising:

a base;

a nozzle;

a set point lever on which the nozzle is mounted, the set point lever being pivotably mounted on the base for pivoting the nozzle about a set point and input axis in response to a process variable set point adjustment;

a flapper pneumatically cooperating with the nozzle and pivotably mounted on the base for pivotal movement about the set point and input axis and about a feedback axis;

a process lever connected to the flapper for pivoting the flapper about the set point and input axis in response to the process variable; and

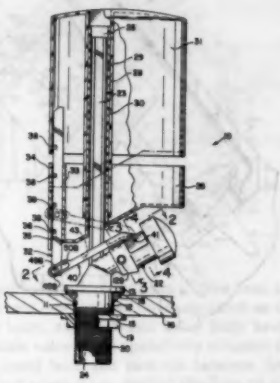
a feedback lever connected to the flapper for pivoting the flapper about the feedback axis in response to feedback.

4,453,560

HYDRAULICALLY BALANCED VALVE MECHANISM

R. Frank Nestich, Glenmont, and Burton L. Preston, Mansfield, both of Ohio, assignors to Interpace Corporation, Parsippany, N.J.

Filed Sep. 24, 1981, Ser. No. 305,168
Int. Cl.³ F16K *31/26*; E03B *7/08*
U.S. Cl. 137—312 **16 Claims**



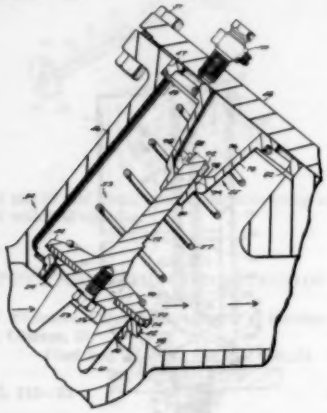
1. A ballcock for a flush tank comprising: a body having a shank portion and a valve housing, said shank portion adapted to pass through a wall of the flush tank for connection to a supply line; an inlet passage communicating between the said shank portion and said valve housing; an exhaust port penetrating said valve housing; a valve seat presented within said valve housing, to surround said inlet passage as it communicates with said valve housing, and located between said exhaust port and said shank portion; a valve element having a piston secured to a stem portion and received within said valve housing for translational movement; a control chamber by which to effect the application of fluid pressure axially against the stem portion in opposition to the pressure applied on said piston by the fluid being controlled; float means operatively connected to said valve element for initiating translational movement thereof; a washer carried by said piston and adapted sealingly to engage or disengage from the valve seat in response to the translational movement of said valve element to close and open the ballcock, respectively; a nozzle projecting through said washer and disposed within the perimeter of said valve seat to communicate continually with said inlet passage; a bore extending axially of said piston and stem portions; and, at least one orifice means opening radially through said nozzle on the inlet passage side of said washer and communicating with said axial bore through said piston and stem to effect communication between the said inlet passage and said control chamber, said orifice means opening radially through said nozzle in sufficient proximity to the flow between said washer and said valve seat to communicate the venturi effect, which is created by said flow between said washer and valve seat, through said orifice means to said control chamber whereby to reduce the pressure in said control chamber and thereby hydraulically assist in translating the valve element during both its opening and closing movements.

4,453,561

CHECK VALVE ASSEMBLY FOR USE IN BACKFLOW PREVENTERS OR THE LIKE

Robert E. Sands, Shelbyville, Ill., assignor to Mueller Co., Decatur, Ill.

Filed May 28, 1982, Ser. No. 383,307
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—327 **6 Claims**



1. A check valve to prevent backflow in a system comprising:

a body member having a flow passage therethrough with an inlet and an outlet, said body member further having an annular valve seat in said passage and an opening through its wall opposite and coaxial with said valve seat;

a tamperproof pre-loaded valve module inserted as a unit through said opening for coacting with said valve seat and removable as a unit;

a cover plate for retaining said valve module in position in said body member;

said module including a valve disc having a valve stem extending from one side thereof with the other side having a seal element for coacting with said valve seat, a spring retainer, said spring retainer having a tapered cup-shaped body with an annulus at one end for receiving said valve stem therethrough and a radial outwardly extending flange at the other end having a diameter to fit within said opening, a coil spring extending between said flange of said spring retainer and said valve disc, and a retaining nut carried on the end of said valve stem within said tapered body to provide a preload on said spring, said retaining nut being threaded onto said valve stem and seated against said annulus of said spring retainer when said coil spring is compressed and prior to insertion of said module into said body member, said module having an overall length between said seal element and said flange of said spring retainer greater than the overall length between said valve seat and said opening whereby when said module is inserted into said body member onto said valve seat, said cover plate is installed, said spring retainer slides on said valve stem and applies a further load on said spring; and

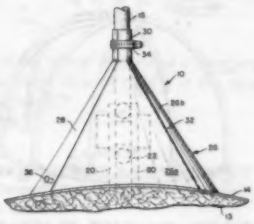
means to prevent inadvertent unthreading of said nut when said module is removed from said valve body until said spring is compressed, said means for preventing inadvertent unthreading of said nut including bosses provided on the interior of the tapered cup-shaped body adjacent the end having the annulus, said bosses being positioned closely adjacent to the periphery of said nut whereby a conventional tool cannot be placed on said nut unless said spring is compressed to cause said valve stem to move relative said spring retainer to lift said nut away from said annulus and said bosses.

4,453,562

RAIN SHIELD FOR INSULATED PIPE INSTALLATIONS

William J. Palkovics, Richmond, Va., assignor to Topline Products, Inc., Richmond, Va.

Filed Sep. 16, 1982, Ser. No. 418,912
Int. Cl.³ E03B *1/00*
U.S. Cl. 137—382 **5 Claims**



1. A rain shield for jacketed insulated pipe systems having vertically projecting rod-like appendages, such as hanger rods, valve stems, and the like, said rain shield comprising:

an inverted funnel-shaped member of resilient sheet material defining a frustoconical body portion joined at its upper end with a coaxial cylindrical neck portion, said sheet material being precurled about the axis of said body and neck portions to establish the normal configuration of said member and to provide a substantial voluted overlap at least in the region including said neck portion when said sheet material is in a relaxed state, said overlap providing a reclosable opening throughout the length of said body and neck portions by unwrapping said sheet material sufficiently so that said member may be placed transversely about a rod or equivalent to spring back into its normal configuration; and

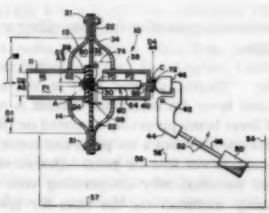
means for securing said neck portion in sealed relationship about the exterior of a rod about which said member is placed.

4,453,563

NON-CHATTERING FLOAT CONTROLLED PILOT OPERATED DIAPHRAGM VALVE

William R. Walters, Cleveland, Okla.

Continuation-in-part of Ser. No. 138,583, Apr. 8, 1980, Pat. No. 4,352,371. This application Jun. 28, 1982, Ser. No. 392,724
Int. Cl.³ F16K *31/34, 33/00*
U.S. Cl. 137—414 **3 Claims**



1. A float-controlled, pilot-operated, diaphragm valve for controlling the flow of a liquid from a conduit carrying said liquid under pressure, P1, to a tank subject to turbulent surface conditions, whereby the float is subject to rapid level changes; the valve comprising;

(a) a housing divided into a first chamber and a second

chamber by a movable wall; an opening in said first chamber;

(b) a first opening through which liquid under pressure P1 enters said first chamber; said wall adapted to move against said first opening to close it responsive to pressure P2, in said second chamber;

(c) a first small orifice in said wall;

(d) a second small orifice in the outer wall of said second chamber; said second orifice larger in area than said first orifice; closure means to close said second orifice, responsive to the level of a float;

the improvement in design to prevent chattering of said diaphragm valve in response to turbulence on the liquid surface; comprising;

(e) operative means inserted between said closure means and said movable wall to reduce the responsiveness of said wall to short time period fluctuations, and increase the responsiveness of said wall to long time period fluctuations of the position of said closure means and said float; and in which

(f) said operative means comprises:

mechanical compressive interconnection means between said movable wall and said closure means;

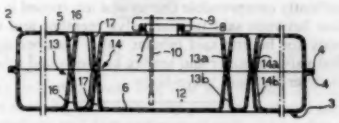
whereby when the liquid surface lowers said valve diaphragm opens by said wall moving away from said first opening, said mechanical compressive interconnection means forces said closure means away from said second orifice when the diaphragm valve engages the interconnection means depressing said float deeper in the liquid and thus delaying the response to the turbulence on the liquid surface, and said interconnection means prevents chattering of the diaphragm valve as the float reaches the liquid surface and the closure means closes the second orifice.

4,453,564

FUEL TANK FOR MOTOR VEHICLES

Giovanni Bergesio, Valfenera, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Apr. 8, 1982, Ser. No. 366,617
Claims priority, application Italy, Apr. 16, 1981, 53149/81[U]
Int. Cl.³ B65D *87/12, 87/46*; F17D *1/00*
U.S. Cl. 137—574 **2 Claims**



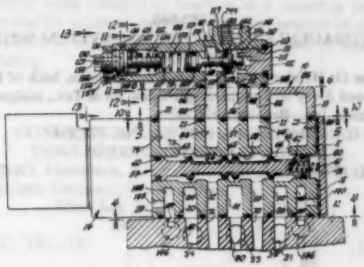
1. A fuel tank for a motor vehicle comprising a plastic upper shell having a main upper wall and a peripheral side wall, a plastic lower shell having a main lower wall and a peripheral side wall disposed in abutting engagement with and welded to the side wall of said upper shell, outlet means defining a centrally located aperture in said main upper wall adapted to receive a fuel feed pipe for supplying fuel to a motor vehicle engine, a first pair of semi-annular ribs extending into said tank from said main upper wall on opposite sides of said outlet means, a second pair of semi-annular ribs extending into said tank from said main lower wall into engagement with said first pair of ribs to provide a pair of semi-annular baffle walls which define a substantially cylindrical chamber for the reception of said fuel feed pipe, the ends of said semi-annular baffle walls being offset with one end of each semi-annular baffle wall opposing the concave surface of the other semi-annular baffle wall to define a pair of restricted passages for communicating said chamber with the remaining part of said tank to reduce the effect of transverse and longitudinal accelerations and decelerations on the fuel in said tank.

4,453,565

FOUR-WAY VALVE WITH COVER MOUNTED PRESSURE REGULATING AND FLOW CONTROL VALVE

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to MAC Valves, Inc., Wixom, Mich.

Filed Feb. 24, 1982, Ser. No. 351,977
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—596 **9 Claims**



1. A four-way air valve which includes a valve base, a valve body mounted on said base, a valve cover mounted on the top end of the valve body, and with said valve body having an axially movable main valve spool operatively mounted therein in a main valve spool bore and movable between first and second flow control positions to control the flow of pressurized air from an air supply passage means in the valve base to a selected one of a pair of cylinder air passages in the valve body while simultaneously controlling the exhaust of air under pressure from the other cylinder air passage to a selected one of a pair of exhaust chambers, and means for moving the valve spool from the first flow control position to the second flow control position, and back to said first flow control position, characterized in that:

(a) said valve base, valve body, and valve cover have communicating inlet air passages formed therein for the reception of inlet air under a primary pressure from said air supply passage means in the valve base, with the lower end of the inlet air passage in the valve body communicating with the upper end of the inlet air passage in the valve base, and said inlet air passage in the valve body is extended around and upwardly above said main valve spool bore and into a position where it is divided into a pair of upper inlet air passages that are laterally spaced apart and extend upwardly through the upper end of the valve body and through the valve cover, a downwardly directed inlet air passage is formed from the exterior side of the valve cover and downwardly therethrough and through the upper end of the valve body in a position between the two aforementioned pair of upwardly directed upper inlet air passages and downwardly into communication with said main valve spool bore for directional flow control of pressurized air by the movable valve spool into a selected one of the cylinder air passages which extend downwardly from the main valve spool bore through the valve body and valve base and to cylinder ports in the valve base;

(b) said pair of exhaust chambers are each formed partially in the valve body and partially in the valve cover in positions above the main valve spool bore, and they are each connected by an exhaust air passage which conveys air exhausting from a cylinder air passage through the main valve spool bore, in a direction upwardly through the exhaust chamber and then downwardly through the valve body and the valve base, and out through an exhaust port in the valve base; and,

(c) a pressure regulating valve is mounted on the top of said

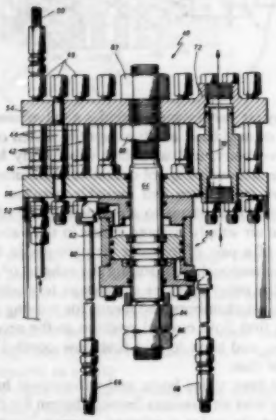
valve cover and it blocks flow through one of said pair of upwardly directed inlet air passages and communicates with the other of said pair of upwardly directed inlet air passages and said downwardly directed inlet air passage for regulation of the primary inlet air pressure entering the pressure regulating valve from said other of said pair of upwardly directed inlet air passages to provide a flow of regulated secondary air pressure down into the main valve spool bore.

4,453,566

HYDRAULIC SUBSEA CONTROL SYSTEM WITH DISCONNECT

Herman O. Henderson, Jr.; Joseph L. LeMoine, both of Houston, and Jerry B. Tomlin, Sugar Land, all of Tex., assignors to Koomey, Inc., Brookshire, Tex.

Filed Apr. 29, 1982, Ser. No. 373,184
Int. Cl.³ F16L *37/28, 35/00*
U.S. Cl. 137—614.02 **6 Claims**



1. In a hydraulic subsea control system having two separate redundant subsea control pods, a hose connected to each pod, each hose including a fluid power supply line and a set of fluid control lines, said hose extending between surface controls and each pod for selectively actuating said control lines for controlling hydraulic power from the power supply line to underwater equipment, and a hydraulic switch for alternately providing fluid power to the power supply lines, the improvement in means for alternately connecting and disconnecting the sets of fluid control lines to each pod from the surface controls comprising,

coacting quick disconnect couplings having first and second portions and positioned between the surface controls and each set of fluid control lines to the separate pods, each portion including a valve whereby when the first and second portions are engaged the valves open to permit fluid flow and when disengaged the valves close to shut off said fluid flow through the control lines,

first and second junction plates connected between the surface controls and each set of fluid control lines to the separate pods, the first plates connected to the coupling portions on each set of fluid control lines, and the second plates connected to the coupling portions connected to the surface controls,

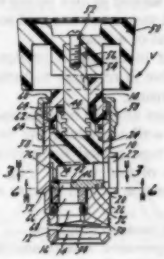
a hydraulic cylinder and piston assembly connected between each of the first and second plates, said assemblies connected to control means alternately connecting and disconnecting the set of fluid control lines to each pod to the surface controls whereby the two pods are controlled separately, but redundantly.

4,453,567

VALVE ASSEMBLY

Robert D. MacDonald, Mesa, Ariz., assignor to Masco Corporation, Taylor, Mich.

Filed Mar. 29, 1982, Ser. No. 362,902
Int. Cl.³ F16K *11/00*
U.S. Cl. 137—614.11 **10 Claims**



1. A faucet valve comprising a valve body, a first bore in said valve body, a second bore in said valve body smaller than said first bore and opening into and offset from the longitudinal axis of said first bore, an outlet passageway in said main body open to said second bore, a first valve member rotatable in said bore and having a flat valving surface, an inlet passageway through said first valve member and offset from the axis of rotation of said valve member open to said valving surface, a second passageway through said first valve member open to said inlet passageway in said first valve member and capable of registry with said outlet passageway in said valve body and, a tubular valve member in said second bore and having a flat annular valving surface and an inlet passage therethrough communicating with such inlet port;

wherein upon rotation of said first valve member, its inlet passage is brought into and out of registry with said inlet passageway in said tubular valve member, said second passageway through said first valve member being in registry with said outlet passageway through said main body in at least some of the rotational positions of the first valve member wherein the inlet passageway of the two valve members are in at least partial registry; and

a resiliently compressible O-ring seal interposed in ciompression between said tubular valve member and said valve body for biasing said tubular valve member against said first valve member and sealing between said tubular valve member and said valve body.

4,453,568

GAS CONTROL SYSTEM

Carlos R. Canalizo, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 21, 1982, Ser. No. 390,204
Int. Cl.³ F16K *31/126*
U.S. Cl. 137—624.14 **5 Claims**

1. A system for controlling injection of gas into a well comprising,

a supply gas line for injecting gas into a well,

a gas operated motor valve controlling flow through said line,

a choke in said line limiting flow therethrough when the motor valve is open,

a gas operated timer,

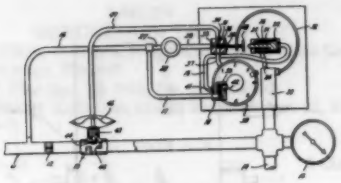
a source of gas for winding said timer and for closing said motor valve,

valve means for alternatively venting and supplying gas to said motor valve and timer,

pressure controlled actuator means for moving said valve means to gas supply position in response to a selected low injection gas pressure in the well,

a reset unit for overriding said actuator means and moving said actuator means and thereby said valve means to gas venting position,

said reset unit responsive to the differential between injection well pressure and supply gas pressure for overriding said actuator means and moving said actuator means and



valve means to vent position and to the differential between injection well pressure and ambient pressure for releasing said actuator, and

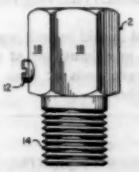
second valve means for alternately delivering supply gas to said reset unit in response to said timer being at zero time and venting supply gas from said reset unit in response to said timer being at other than zero time.

4,453,569

CHECK VALVE WITH INSPECTION MEANS

Paul C. Symmons, Wellesley, Mass., assignor to Symmons Industries, Inc., Braintree, Mass.

Filed Mar. 15, 1982, Ser. No. 357,997
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—879 **5 Claims**



1. In a check valve of the type comprising (a) a valve casing, said valve casing having first and second ends and defining a passageway extending from said first end to said second end, (b) a valve seat disposed about the perimeter of said passageway intermediate said first and second ends, (c) a valve member disposed within said passageway between said valve seat and said second end, said valve member being sized relative to said passageway and said valve seat so that said member is movable along said passageway yet capable of seating on said valve seat so as to close off said passageway, and (d) spring means disposed within said passageway between said valve member and said second end, said spring means being disposed to yieldably urge said valve member into engagement with said valve seat so as to close off said passageway, whereby (1) when fluid flows into said passageway from said second end toward said first end so as to reinforce the spring bias on said valve member, said valve member will remain seated on said valve seat and said passageway will be closed off to fluid flow, and (2) when fluid flows into said passageway from said first end toward said second end so as to counter the spring bias on the valve member, said valve member will disengage from the valve seat and open up said passageway to fluid flow if the pressure exerted on said valve member by the fluid flow is greater than the pressure exerted on the valve member by said spring means;

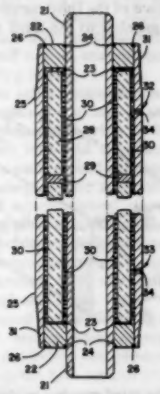
the improvement wherein said passageway comprises a bore extending from said second end of said casing and a counterbore extending from said first end of said casing coaxially with said bore, said valve seat comprises a hollow sleeve disposed within said bore and a flange on one end of said sleeve disposed in said counterbore, the outer side of said sleeve is contoured so as to define a chamber between said sleeve and said casing, said sleeve also has at least one hole providing fluid communication between said chamber and said bore, and a needle valve is mounted in said casing in communication with said chamber, said needle valve being adapted to function as a sampling valve to reveal by access to said chamber the presence or absence of fluid in said passageway at said first end of said valve casing.

4,453,570

CONCENTRIC TUBING HAVING BONDED INSULATION WITHIN THE ANNULUS

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco,, Calif.

Filed Jun. 29, 1981, Ser. No. 278,800
Int. Cl.³ F16L *59/14*
U.S. Cl. 138—149 **1 Claim**



1. An insulated concentric conductor tubing having a substantially solid insulation in the annular space between said concentric conductors comprising:

(a) a first conductor having an annular surface;

(b) a second conductor within said first conductor and having an annular surface establishing an annular space between said annular surface of said first and said annular surface of said second conductors;

(c) a preformed substantially solid, calciuim silicate insulating material within said annular space; and

(d) a foamed sodium silicate bonding material within said annular space substantially completely filling said annular space not filled by said preformed substantially solid insulating material, sealing said annular space and bonding said insulating material to said annular surfaces of said first and said second conductor.

4,453,571

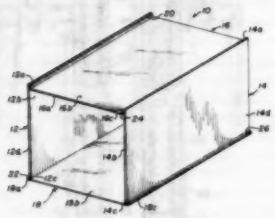
SQUARE CORNER DESIGN FOR DUCTWORK

Robert P. Sullivan, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 18, 1981, Ser. No. 264,748
Int. Cl.³ F16L *9/02*
U.S. Cl. 138—171 **4 Claims**

1. In square corner ductwork that is particularly suited for use in applications of the type wherein it is necessary for the

ductwork to be exposed to increasingly higher pressures of a magnitude of 40" to 50" water gauge or higher and wherein the end reaction loads being exerted against the ductwork corners exceed two kips in magnitude, said square corner ductwork including a first member having a pair of lateral edges and a pair of planar surfaces, a second member of substantially the same width as the first member, the second member having a pair of lateral edges and a pair of planar surfaces, the first and the second member each defining a plane that extends in parallel relation to that of the other, a third member having a pair of lateral edges and at least one planar surface, a fourth member of greater width than the third member, the fourth member having a pair of lateral edges and at least one planar surface, the third member and the fourth member each defining a plane that extends in parallel relation to that of the other member and in perpendicular relation to the planes of the first and second members, the improvement comprising weld means operative for securing together by welding the first, second, third and fourth members so as to provide the resulting ductwork with a substantially rectangular configuration, said weld means including a first downhand fillet weld, a second downhand fillet weld, a third downhand fillet weld and a fourth downhand fillet weld, said first downhand fillet weld extending from one planar surface of the first member to the at least one planar surface of the third member so as to effect the joinder of the first member to the third member by securing



one lateral edge of the third member in abutting relation to said one planar surface of the first member and with one lateral edge of the first member projecting outwardly of said at least one planar surface of the third member, said second downhand fillet weld extending from the other planar surface of the first member to the at least one planar surface of the fourth member so as to effect the joinder of the first member to the fourth member by securing the other lateral edge of the first member in abutting relation to said at least one planar surface of the fourth member and with one lateral edge of the fourth member projecting outwardly of said other planar surface of the first member, said third downhand fillet weld extending from one planar surface of the second member to the at least one planar surface of the third member so as to effect the joinder of the second member to the third member by securing the other lateral edge of the third member in abutting relation to said one planar surface of the second member and with one lateral edge of the second member projecting outwardly of said at least one planar surface of the third member, and said fourth downhand fillet weld extending from the other planar surface of the second member to the at least one planar surface of the fourth member so as to effect the joinder of the second member to the fourth member by securing the other lateral edge of the second member in abutting relation to said at least one planar surface of the fourth member and with the other lateral edge of the fourth member projecting outwardly of said other planar surface of the second member.

4,453,572

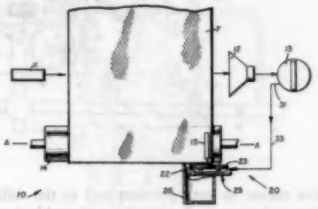
METHOD AND APPARATUS FOR WASTE SELVAGE REMOVAL

Worth M. Key, Hurt, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jul. 26, 1982, Ser. No. 401,694

Int. Cl.³ D03D *49/70, 17/40*

U.S. Cl. 139—302 **14 Claims**



1. Apparatus for removing waste selvage containing warp ends or leno yarns interlaced with filling tails from a shuttleless loom, the loom including a suction source having an impeller pump with an exhaust, and a fabric take-up roller rotatable about a horizontal axis; comprising:

a substantially downwardly directed venturi mounted below said fabric take-up roller in operative association with waste selvage trimmed from fabric being taken up by the fabric take-up roller;

exhaust conduit means extending from said impeller pump exhaust to said venturi for providing the motive power for the venturi to suck waste selvage through the venturi and deposit it in said waste selvage container, including a branch connector at said venturi, one branch adapted to deposit waste selvage in a waste selvage receiving structure, and another branch receiving the waste selvage from the loom; and

baffle means mounted in said branch connector for inducing rotary turbulence in exhaust air at said venturi so that filling tails and warp ends or leno yarns of the waste selvage twist together.

4,453,573

PAPERMAKERS FORMING FABRIC

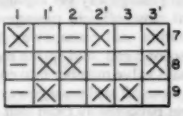
Charles E. Thompson, Raleigh, N.C., assignor to Huyck Corporation, Wake Forest, N.C.

Continuation-in-part of Ser. No. 120,377, Feb. 11, 1980, Pat. No. 4,356,844. This application Mar. 17, 1982, Ser. No. 359,086

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ D03D *15/00*; **D21F** *1/10*

U.S. Cl. 139—[illegible] A **3 Claims**



1. An endless loop monoplanar papermakers' fabric comprising inter-woven warp and filling yarn systems, said warp yarn system comprising warp yarns woven in a preselected conventional unbalanced papermakers' weave pattern chosen from the class consisting of a $\frac{1}{4}$ twill, a 2/1 twill, a $\frac{1}{4}$ twill, a 4/1 twill, a $\frac{1}{4}$ twill, a 3/2 twill, a 1/5 twill, a 5/1 twill, a $\frac{1}{4}$ sateen and a 4/1 sateen, combined and alternated with warp yarns woven in accordance the reverse of said preselected pattern so that each fill yarn has an equal number of warp yarns passing thereover and thereunder, whereby the forces within said fabric are

balanced reducing the tendency to edge curl and said fabric is provided with an improved support surface.

4,453,574

DISPENSING OF LIQUIDS

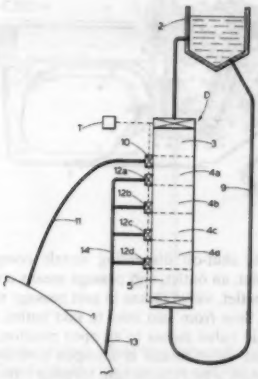
Leonard G. Elliott, Ulverston, England, assignor to Glaxo Group Limited, London, England

Filed Apr. 22, 1981, Ser. No. 256,402

Claims priority, application United Kingdom, Apr. 22, 1980, 8013254

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—5 7 Claims



1. A device for dispensing measured volumes of liquid to a vessel under higher pressure, the said device comprising a central discharge chamber arranged between, and connected in series with, an inlet chamber at one end, and an escape chamber at the other end, a discharge port at the inlet chamber end of the discharge chamber and a pressure equalising port at the other end of the discharge chamber, the said chambers having walls arranged to provide a smooth passage for liquid without steps therein, and the inlet and escape chambers respectively having inlet and escape ports each controlled by valve members, a valve member controlling the discharge port, and a valve member controlling the pressure equalising port, the said escape chamber being sized to retain liquid therein by interfacial tension when liquid is being discharged from the discharge chamber.

7. A method of feeding a measured volume of a liquid from a reservoir to a vessel at higher pressure in which said liquid is dispensed from a dispensing device as claimed in claim 1, said method comprising the steps of opening the escape port while all the other ports are closed thereby to allow gas to escape so as to equalise the pressure in the chamber to that of the reservoir, opening the inlet port to the inlet chamber to permit the passage of liquid additive from the reservoir to the bottom of the system while the gas can continue to escape from the escape port of the escape chamber so that liquid rises through the chambers until they are completely filled with liquid, then closing the escape port and the inlet ports, opening the pressure equalising port and the discharge port thereby to allow liquid to flow from the discharge chamber into the vessel while retaining liquid in the escape chamber by interfacial tension and retaining liquid in the lower chamber and then, when the discharge chamber is completely emptied, closing the pressure equalising port and the discharge port.

4,453,575

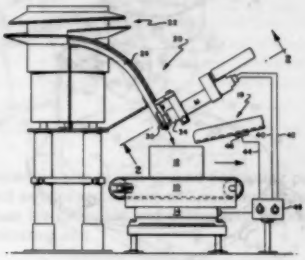
CONTAINER FILLING SYSTEM

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Feb. 5, 1982, Ser. No. 346,266

Int. Cl.³ G01G *13/06*

U.S. Cl. 141—83 4 Claims



1. A system for filling containers with pellets comprising a container weighing and filling station for filling containers one at a time with a prescribed weight loading of pellets and a conveyor for moving empty containers into and loaded containers away from said station, said station including:

a container weighing means;

a motor driven bulk pellet feeding means arranged to deliver pellets into a container disposed on said weighing means;

a plurality of supplementary pellet feeding means arranged to deliver pellets into said container disposed on said weighing means, each of said supplementary pellet feeding means including a chute accommodating a supply of pellets arranged in longitudinal alignment and having a side wall formed with an opening into the interior of said chute and a motor driven pellet feed control wheel having its periphery arranged to project through said opening for frictional engagement with said pellets successively as they pass through said chute; and

a controller connected to said weighing means for operating said bulk pellet feeding means to supply pellets to said container up to just below said prescribed weight loading and for operating the feed control wheels of said supplementary pellet feeding means for supplying pellets to said container until said prescribed weight loading is achieved, and said controller is adjustable to cause said wheels to operate at varying speeds.

4,453,576

APPARATUS FOR FILLING CONTAINERS SUCH AS COMMUNION CUPS

W. Mike Burns, 101 29th St., Gulfport, Miss. 39501

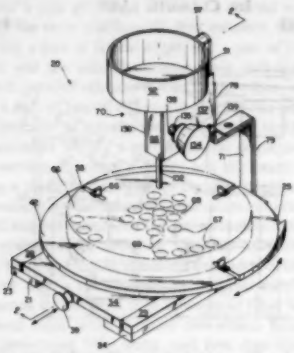
Filed Sep. 24, 1982, Ser. No. 422,591

Int. Cl.³ B67D *5/00*

U.S. Cl. 141—168 21 Claims

9. Apparatus for filling containers such as communion cups comprising a longitudinally extending base, the longitudinally extending base having inner and outer end portions including longitudinally extending slide guide means for receiving a slide in slidable relationship thereto, slide means having upper and lower surfaces slidably mounted in the longitudinally extending slide guide means for longitudinal inward and outward movement with respect to the base, a rotatable turntable having upper and lower surfaces, mounting means carried by the slide for rotatably mounting the turntable in spaced relationship with respect to the upper surface of the slide, the turntable including means for supporting a plurality of containers to be filled on or above the upper surface thereof, means for storing liquid to be dispensed and for dispensing controlled amounts thereof into the said plurality of containers to be filled, and mounting means carried by the base for mounting said liquid

storage and dispensing means whereby said liquid storage and dispensing means is carried by the base, and wherein cooperating stop means are carried by the base and the slide guide for limiting the maximum longitudinal inward and outward move-



ment of the slide, and wherein when the slide is in said maximum inward position, the said liquid dispensing means is effective to dispense liquid into a container to be filled with the liquid which is supported by the turntable directly above the center of rotation of the turntable.

4,453,577

NOZZLE WITH AUTOMATIC SWITCH-OFF

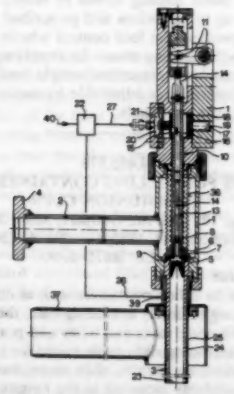
Helmut Romberg, Bad Durkheim, and Horst Koerner, Boehl-Iggelheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 371,013

Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117669

Int. Cl.³ B67D *5/04*

U.S. Cl. 141—209 **4 Claims**



1. A nozzle for filling containers with liquid, with automatic termination of delivery when they have been filled, comprising a nozzle body which is equipped with an inlet tube and an outlet tube, said outlet tube including an orifice, a valve which is located in the nozzle body, said valve controlling the flow of liquid from the inlet tube to the outlet tube, a delivery lever for operating said valve, a connecting element detachably inserted between the delivery lever and the valve, a pneumatic drive member coupled to said connecting element and a pneumatic relay, the input of said pneumatic relay being connected via a pressure channel to the orifice of the outlet tube and the output of said relay being connected to said pneumatic drive member, said relay responding to a particular pressure in said pressure channel to control said drive member so as to close said valve.

4,453,578

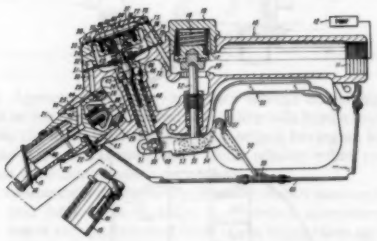
AUTOMATIC SHUT-OFF DISPENSING NOZZLE RESPONSIVE TO LIQUID IN A TANK REACHING A PREDETERMINED LEVEL AND TO A SUPPLY PRESSURE

Paul R. Wilder, Hamilton, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jan. 12, 1983, Ser. No. 457,260

Int. Cl.³ B67D *5/04*

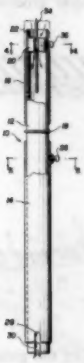
U.S. Cl. 141—209 **17 Claims**



1. An automatic shut-off dispensing nozzle comprising a body having an inlet, an outlet, and passage means connecting said inlet to said outlet, valve means in said passage means for controlling liquid flow from said inlet to said outlet, movable means to move said valve means to an open position, holding means to hold said valve means in an open position, a first chamber in said body, a first diaphragm forming a first wall of said first chamber, a second diaphragm, venturi means disposed in said passage means downstream of said valve means to create a venturi effect when liquid flows through said passage means from said inlet to said outlet due to activation of a pressurized source communicating with said inlet, said venturi means including a valve seat, first passage means in said valve seat forming part of said passage means between said inlet and said outlet, second passage means in said valve seat providing communication of said first passage means with the atmosphere and said first chamber, and a valve cooperating with said valve seat to block said first passage means in said valve seat, means to urge said valve of said venturi means into engagement with said valve seat of said venturi means when the pressure in said passage means reaches a predetermined pressure greater than zero, release means to release said holding means resulting in said valve means being moved to its closed position, said first diaphragm being connected to said release means to render said release means effective upon movement of said first diaphragm in response to a partial vacuum created in said first chamber when the level of the liquid in a tank being filled reaches a predetermined level to block communication of said second passage means in said valve seat of said venturi means with the atmosphere, causing means to cause movement of said second diaphragm to a release position only when the pressure in said passage means is less than the predetermined pressure at which said urging means of said venturi means urges said valve of said venturi means into engagement with said valve seat of said venturi means, responsive means responsive to movement of said second diaphragm to its release position to render said release means effective when said second diaphragm is moved to its release position by said causing means, said responsive means allowing said first diaphragm to be moved in response to the partial vacuum created in said first chamber to render said release means effective when said second diaphragm is not in its release position, and relief means

to decrease the pressure to substantially zero in said passage means when said valve of said venturi means engages said valve seat of said venturi means upon inactivation of the pressurized source communicating with said inlet to allow said second diaphragm to be moved to its release position by said causing means, said relief means communicating said passage means upstream of said valve of said venturi means with the atmosphere when said valve of said venturi means engages said valve seat of said venturi means.

4,453,579
FUEL SUMP DRAINAGE TOOL
Gerry E. Gould, Rte. 3, Box 150, Newport, N.C. 28570
Filed May 27, 1982, Ser. No. 382,801
Int. Cl.³ B65G *45/00*
U.S. Cl. 141—329 **4 Claims**



1. A tool for draining fuel from aircraft comprising an elongated hollow body having an upper end and a lower end, a fuel block mounted at said upper end of said hollow body, said block being formed with at least one opening to permit fuel to flow across said block, said solid drain needle, means to mount said drain needle in said block to extend out from said upper end of said hollow body, notch means to permit the flow of fuel therethrough formed in said lower end of said hollow body, an extendable extension slidably mounted on said lower end of said hollow body, said lower end extrusion having a substantial length with respect to the overall length of said hollow body, and securing means to adjustably secure said extension in an adjusted position with respect to said hollow body to thereby determine the overall length of said tool in use.

4,453,580
WOOD SPLITTING DEVICE
Wayne J. Patten, 155 Austin La., Alamo, Calif. 94507
Filed Jul. 14, 1982, Ser. No. 382,469
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **9 Claims**

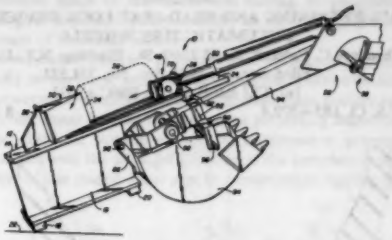
1. A device for converting a ground supported and machine operated shovel to a wood splitter, the machine operated shovel having a connected shovel arm and a detachable extending and contracting arm, comprising:

a. a platform for supporting wood, said platform having means thereon positioned to contact the ground;

b. a wedge being fixed to said platform;

c. means for forcing the wood into contact with said wedge along said platform said means for forcing the wood into contact with said wedge including the extending and contracting arm detached from the shovel, the extending and contracting arm having a proximal and distal end portion, said distal end portion contacting the wood, said proximal end portion of said extending and contracting arm being linked to means for extending and contracting said extending and contracting arm; and

d. means for holding the shovel detached from the extending



and contracting arm to said ground contacting platform, the shovel and connected support arm being connected to said means for extending and contracting the extending and contracting arm.

4,453,581
TIRE AND WHEEL ASSEMBLY WITH A SHIELD FOR TIRE FLAPS
Herbert Easterly, P.O. Box 767, Crossville, Tenn. 38555
Continuation of Ser. No. 217,710, Dec. 18, 1980, abandoned.
This application Apr. 21, 1983, Ser. No. 487,181
Int. Cl.³ B60C *5/00*
U.S. Cl. 152—349 **3 Claims**

1. In a tire and wheel assembly of the type including a wheel rim, a tire and an inner tube having a valve stem projecting through the wheel rim, an elongated opening in the wheel rim for receiving the valve stem, and a flap disposed between the wheel rim and the inner tube to provide protection for the inner tube surface adjacent the wheel rim, the flap including a central portion and side portions, the improvement comprising a shield interposed between the flap and the wheel rim, completely covering the opening in the wheel rim to shield the flap from exposure to exterior substances such as grease and oil through the opening, the shield being constructed of a lightweight material which resists deterioration when exposed to the substances such as grease and oil, the shield including a central portion and flanges extending over the side portions of the flap in proximity to the rim opening, the shield having a width such that its flanges extend at least partially along the side portions of the flap to protect the side portions and prevent rotation of the shield about the valve stem, and the central

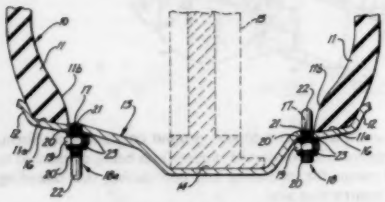
portion of the shield including a relatively small opening for snugly receiving the valve stem.

4,453,582

AIR RETAINING AND BEAD-SEAT-LOCK DEVICE FOR PNEUMATIC TIRE WHEELS

Theodore C. Patecell, 33-52 156th St., Flushing, N.Y. 11354

Filed Dec. 17, 1981, Ser. No. 331,521
Int. Cl.³ B60B *25/20*; B60C *15/02*
U.S. Cl. 152—379.4 **8 Claims**



1. An air retaining and bead-seat-lock device for pneumatic tire wheels, said device comprising an elongated unitary member having air retaining engagement with an aperture in a tire rim adjacent the seated tire bead, said device having two end-to-end reversible positions of operative engagement with the rim, one position of operative engagement disposing one end of the device substantially flush with the inner rim surface facilitating air pressure seating of the tire bead against the rim flange, and the other position of operative engagement disposing the other end to protrude beyond the inner rim surface adjacent the tire bead to support the same in seating engagement with the rim flange, said device further comprising a unitary member having a central, wrench engaging enlargement, short threaded studs at opposed sides of said enlargement having interchangeable close threaded engagement with said rim aperture, said wrench engaging enlargement being of a size to provide effective clamping engagement of gasket means disposed between said enlargement and the outer rim surface, one of said studs having a coaxial, unthreaded extension adapted to protrude at least $\frac{1}{4}$" beyond the inner surface of said rim, said device when positioned to dispose said extension inside the rim providing a bead-seat-lock supporting the tire bead in engagement with the rim flange, and said device when oriented to engage the other stud with said rim aperture permitting free bead movement past said aperture during mounting and dismounting of a tire.

4,453,583

CLOSED TORUS TIRE/RIM ASSEMBLY

William T. Smith, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1982, Ser. No. 361,937
Int. Cl.³ B60B *25/08, 25/18*
U.S. Cl. 152—410 **2 Claims**

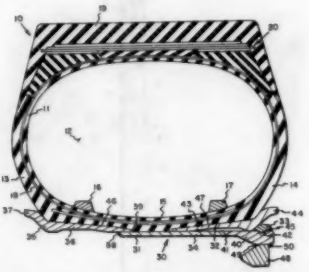
1. A tire and rim assembly comprising a closed torus tire mounted upon a rim, said rim comprising:

(a) a rim base that is a weldment of three components, each said component having a generally hollow cylindrical shape with radially inner and outer circumferential surfaces and first and second axial ends, said three components being:

(i) a center band;

(ii) a back section having a tapered base portion with an integrally formed sidewall protecting flange extending radially outwardly along the first axial end of said back section, the radially outer circumferential surface of said tapered base portion being inclined with respect to a line parallel to the axis or rotation of the tire and rim assembly, said back section having a width, with respect to the axis of rotation of said tire and rim assembly, that is less than one-half the width of said rim base, the radially inner circumferential surface of the tapered base portion of said back section having the same diameter at each axial end thereof with said diameter being only slightly larger than that of the radially outer circumferential surface of said center band, the second axial end of said tapered base portion and part of the radially inner circumferential surface of the tapered base portion of the back section overlapping the first axial end of the center band and being weldably attached thereto; and

(iii) a gutter band having a radially outer circumferential surface with the same diameter as the radially outer circumferential surface of said center band, the first axial end of said gutter band being weldably attached to the second axial end of said center band, the radially outer circumferential surface of said gutter band having at least one annular groove therein located near the



second axial end of the gutter band, said closed torus tire being mounted around said rim base;

(b) a tapered base band that is a mirror image part to the back section component of said rim base, said tapered base band being interposed between said closed torus tire and said rim base with the tapered base portion of the tapered base band disposed axially inwardly of the annular groove in the gutter band component of said rim base, both ends of the radially inner circumferential surface of the tapered base band being in contact with the radially outer circumference of the in base; and

(c) an expandable lock ring means mounted with its radially inward portion in the annular groove in the gutter band component of said rim base, and axially inner surfaces of said expandable lock ring means being in contact with the radially inner circumferential surface of said tapered base band to retain said tapered base band in place when said closed torus tire is inflated.

4,453,584

SEALING SYSTEM FOR MOVABLE INSULATION

Richard S. Steele, 601 Alter St., Broomfield, Colo. 80020

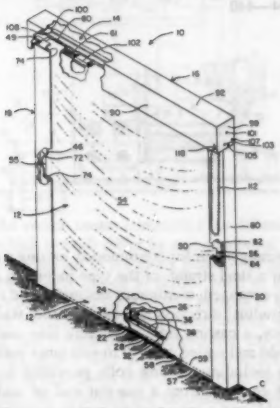
Continuation of Ser. No. 266,209, May 22, 1981. This application May 17, 1983, Ser. No. 495,270
Int. Cl.³ E06B *9/08*
U.S. Cl. 160—121 R **25 Claims**

1. In movable insulation having three layers of material forming air pockets therebetween and motion producing means connected to said layers for moving the insulation over an area to be covered and retracting the insulation away from said area, the improvement comprising:

side seal means located at the lateral edges of said layers for both preventing air infiltration currents from flowing from the interior of said air pockets to the exterior around said lateral edges and for mechanically resisting transverse forces in said layers caused by bulging of said layers as they are moved over and retracted from said area, said side seal means including first and second pairs of flexible

outer seal strips attached to and located at the outside layers of said insulation, one member of each pair being secured to the outer surface of one outside layer and the other member of each pair being secured to the outer surface of the other outside layer, each said seal strip having a free edge, and including first and second flexible inner seal strips attached to opposite lateral edges of an inner layer of said insulation;

said side seal means also including a pair of elongated channel-shaped members each defined by a bottom and a pair of upstanding fins adapted to be positioned over a respective one of the said lateral edges of said outer layers, each said channel member having an outer guide member attached to each of its fins and projecting toward its said



bottom, and including an inner guide member positioned in each said channel-shaped member in a manner capable of resisting a transverse force thereon;

said outer guide members of each channel-shaped member positively engaging a respective one of said outer seal strips with each said outer seal strip positioned between its respective outer guide member and a respective fin thereof, and each said inner guide member being positioned between its respective inner seal strip and the adjacent layer of its associated inner layer, whereby said inner guide members and said outer guide members mechanically separate said inner layer and said outer layer into spaced-apert relation to one another as the insulation is moved over the area to be covered.

4,453,585

WINDOW THERMAL INSULATION DEVICE

Bruno Ruggeberg, Sr., 1393 Langley Dr., Gardnerville, Nev. 89410, and James R. Moniz, 2227A Heybourne Rd., Minden, Nev. 89423

Filed Jul. 10, 1981, Ser. No. 282,020
Int. Cl.³ E06B 3/26
U.S. Cl. 160—354 **9 Claims**

1. Window thermal insulation device for thermal insulation of a window opening area comprising:

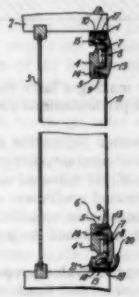
a plurality of linear members arranged in successive longitudinal end to end conforming abutment relation for forming thereby a perimetric selectively sized and shaped enclosure frame defining a window space therewithin and having an outer perimetric edge portion,

a corresponding plurality of interconnectors arranged for interconnecting correspondingly the adjacent ends of the linear members and for maintaining the linear members in successive end to end interconnected stable disposition,

linear locking groove means defined in the linear members and extending therealong peripherally outwardly of the window space and inwardly of the outer edge portion,

a pliable plastic thermal insulation sheet extending across the window space of the frame and having its peripheral margins disposed correspondingly in the locking groove means of the linear members,

a corresponding plurality of linear cover strips located externally on the frame and situated within the confines thereof between the window space and the outer edge portion and having linear locking tongue means projecting therefrom and disposed correspondingly in compression gripping contact with the adjacent portions of the peripheral margins of the plastic sheet and in compression locking en-



gagement with the adjacent locking groove means and arranged for thereby maintaining the plastic sheet in substantially taut condition across the window space and the peripheral margins of the plastic sheet correspondingly in compressively lockingly engaged condition, and

perimetric compression thermal insulation sealing means of resilient compressible fluid impervious sponge material in the form of an outer facial layer continuously extending along the outer edge portion of the linear members peripherally outwardly of the enclosure frame for compression sealing facial contact peripherally outwardly against a counterpart receiving frame portion of an existing correspondingly sized and shaped window opening structure to be thermally insulated thereby.

4,453,586

METHOD OF PRODUCING FROZEN CASTING MOULDS

Emil Jespersen, Glostrup, and Bakshi B. Singh, Horsholm, both of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark

PCT No. PCT/DK81/00062, 371 Date Feb. 17, 1982, 102(e) Date Feb. 17, 1982, PCT Pub. No. WO82/00015, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 22, 1981, Ser. No. 355,580
Int. Cl.³ B22C 9/02
U.S. Cl. 164—37 **9 Claims**

1. A method of producing frozen casting moulds or cores, said method comprising:

(a) providing a granular material;

(b) providing a binder material that is in a fluid state;

(c) cooling the binder material to a temperature below its freezing point to form fine particles;

(d) mixing the granular material and the cooled, particulate binder material to form a homogeneous, easy flowing mixture; and

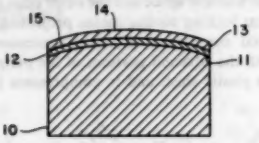
(e) compressing the resulting mixture to bind together the granular material to form a mould or core.

4,453,587

REPLICATION OF HIGH POWER LASER MIRRORS

John G. Gowan, London, England, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 13, 1982, Ser. No. 339,205
Int. Cl.³ B22D *23/00, 29/00*
U.S. Cl. 164—46 5 Claims



1. A method for making a laser mirror faceplate having a mirrored surface of predetermined contour, which comprises the steps of:

a. providing a master replication block having thereon a smooth surface of contour corresponding to said predetermined contour of said mirrored surface, said block having a first predetermined coefficient of thermal expansion;

b. vapor depositing a thin metallic first adherent layer on said surface of said block to a uniform predetermined thickness;

c. vapor depositing at elevated temperature a second layer of faceplate material on said block over said first layer, said faceplate material having a second coefficient of thermal expansion substantially less than said first coefficient of said block to produce a mismatch therebetween;

d. cooling said block, first layer and second layer, said cooling causing separation of said faceplate material from said block due to said mismatch between said first and second coefficients of thermal expansion of, and the presence of said first layer between, said faceplate material and said block; and

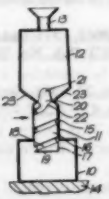
e. removing said second layer of faceplate material from said block and first layer.

4,453,588

COMBINATION MOLD AND SELECTOR DEVICE FOR CASTING SINGLE CRYSTAL OBJECTS

Michael J. Goulette, Mickleover, and Frederick J. Horrocks, Spondon, both of England, assignors to Rolls Royce Limited, London, England

Filed May 18, 1982, Ser. No. 379,612
Claims priority, application United Kingdom, Jun. 11, 1981, 8117924
Int. Cl.³ B22C *9/04, 9/22*
U.S. Cl. 164—352 6 Claims



1. A mould for single crystal casting comprising:

a ceramic shell mould having a main molten metal cavity, an initiating cavity and a selector portion intermediate and communicating with said main cavity and said initiating cavity, and

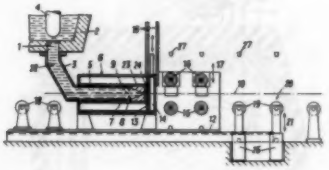
a ceramic selector device having a transition piece extending from one of its extremities into said main cavity and positioned within said selector portion, said selector device having a curvilinear groove formed in its surface, the curvilinear groove opening smoothly out at said one extremity of the selector device and cooperating with said transition piece to provide a smooth increase in the cross-sectional area of said groove.

4,453,589

ARRANGEMENT FOR CONTINUOUSLY CASTING A METAL STRAND

Karl J. Sondermann, Puerto de la Couz, Spain, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed May 5, 1982, Ser. No. 374,960
Claims priority, application Austria, May 22, 1981, 2310/81
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—440 6 Claims



1. In an arrangement for continuously casting a metal strand, in particular a steel strand, of the type including a, preferably horizontally arranged, continuous casting mould reciprocating in the longitudinal direction and having inner walls defining a mould cavity, a casting tube projecting into said continuous casting mould and sealed relative to said inner walls, an extraction means including driving rolls provided for said metal strand as it emerges from a run-out end of said continuous casting mould, and a transporting means including means for moving said transporting means reciprocatingly in the longitudinal direction of said continuous casting mould, the improvement wherein

said transporting means comprises means for mounting said continuous casting mould and said extraction means on said transporting means, and wherein the improvement further comprises

a coolable closure piece being selectively insertable into and removable from a position between said run-out end and said extraction means for selectively closing and opening said mould cavity; and

a guide means directed transverse to the axis of said continuous casting mould, said coolable closure piece being displaceable along said guide means into said position between said run-out end and said extraction means and out of said position to a position located laterally of said mould.

4,453,590

DUTY CYCLE CONTROLLER

Robert A. Holliday, Phoenix, and Warren L. Williamson, Mesa, both of Ariz., assignors to Sun West Solar Systems, Inc., Phoenix, Ariz.

Filed Jul. 12, 1982, Ser. No. 397,459
Int. Cl.³ F28F *27/00*
U.S. Cl. 165—12 10 Claims

1. A duty cycle controller for an air conditioning system including cooling means, heating means, and a thermostat having a cooling switch and a heating switch comprising:

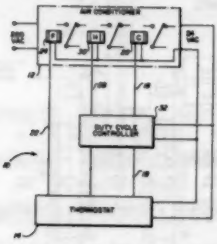
a first solid state switch means adapted to be connected in series with the cooling switch of the thermostat in a circuit, said first switch means for energizing the cooling means of the air conditioner when conductive during a cooling cycle of operation;

a second solid state switch means adapted to be connected in series with the heating switch of the thermostat in a circuit

said second switch means for energizing the heating means of an air conditioner when conductive during a heating cycle of operation;

switch control circuit means for causing said first and second switch means to be conductive when set and nonconductive when reset;

timing means including means for producing clock pulses at a single frequency and digital counter means to which the clock pulses are applied for producing timing pulses at predetermined time intervals during each cycle of operation for setting the switch control circuit means to render



each of the switch means conductive for different periods of time which periods differ by amounts equal to an integer times the period of the clock pulses, and for resetting the switch control means to render each of said switch means nonconductive for different periods of time;

safety means for preventing the switch control means from rendering said switch means conductive for a predetermined delay period after a power interruption or after a thermostat switch opens after having been closed; and

control means for initiating the conductive period for the switch means at the time a thermostat switch closes.

4,453,591

AIR-CONDITIONING APPARATUS FOR MOTOR VEHICLES

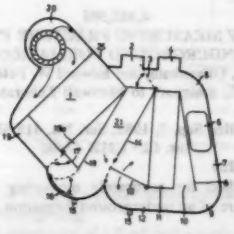
Werner Fehr, Steinheim, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,260

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016679

Int. Cl.³ B60H *3/00*; F25B *29/00*; F24F *3/14*

U.S. Cl. 165—42 **34 Claims**



1. Air conditioning apparatus for conditioning the air supplied to a vehicle passenger space and the like, comprising:

air inlet means;

an evaporator arranged downstream of the air inlet means and including means for cooling air passed therethrough;

evaporator inlet means supplying air from the air inlet means to the evaporator;

evaporator bypass duct means for conducting air from the air inlet means to a location downstream of the evaporator in bypassing relationship to the evaporator;

evaporator outlet guide means for guiding the flow of air away from the evaporator after it has been cooled therein, said evaporator outlet guide means including first deflector plate means for guiding air from the evaporator to the outlet of the evaporator bypass duct means;

first temperature mixing valve means for controlling the proportion of air supplied from the air inlet means to the respective evaporator and evaporator bypass duct means;

a heat exchanger arranged downstream of the evaporator and evaporator bypass duct means and including means for heating air passed therethrough;

heat exchangers inlet duct means for guiding air from the evaporator and the evaporator bypass duct means to the heat exchanger;

heat exchanger bypass duct means for conducting air from the evaporator and evaporator bypass duct means to a location downstream of the heat exchanger in bypassing relationship to the heat exchanger;

heat exchanger outlet guide means for guiding the flow of air away from the heat exchanger after it has been heated therein to a location where it is mixed with the air from the heat exchanger bypass duct means, said heat exchanger outlet guide means including second deflector plate means; and

second temperature mixing valve means for controlling the proportion of air supplied from the evaporator and evaporator bypass duct means to the respective heat exchanger and heat exchanger bypass duct means;

wherein said heat exchanger inlet duct means includes a third deflector plate means and wherein the respective sides of the first and third deflector plate means facing respectively away from the evaporator and heat exchanger form a cool air duct for directing air to the vehicle passenger space in bypassing relationship to both the heat exchanger and the heat exchanger bypass duct means.

4,453,592

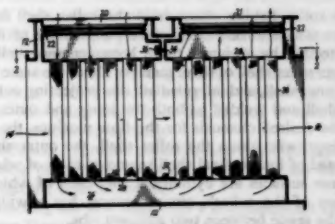
EXPANSION GUIDE

James D. Wightman, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,616

Int. Cl.³ F28F *9/26*

U.S. Cl. 165—82 **4 Claims**



1. A recuperative heat exchanger comprising:

a. a housing having an inlet at one end thereof and an outlet at the opposite end thereof for passing a first fluid therethrough and having an inlet port and an outlet port in an adacent wall thereof for respectively receiving and discharging a second fluid;

b. a plurality of heat exchanger modules disposed within the housing in laterally adjacent spaced relationship intermediate the inlet and outlet to the housing for the first fluid and interconnected in fluid communication to form a serpentine flow path, said modules each comprising a pair of spaced apart tube sheets with aligned apertures therein and a multiplicity of tube-like elements extending between

the aligned apertures in said spaced tube sheets for directing the second fluid therethrough;

c. first flexible bellow means connecting a tube sheet at one end of the laterally outward module at one extremity of said plurality of laterally adjacent modules to the housing in fluid communication with the inlet port for the second fluid;

d. second flexible bellow means connecting a tube sheet at one end of the laterally outward module at the opposite extremity of said plurality of laterally adjacent modules to the housing in fluid communication with the outlet port for the second fluid;

e. header means for enclosing together the remaining ends of adjacent modules so as to interconnect the modules thereby providing a serpentine flow path therethrough for directing the second fluid from the inlet port therefor to the outlet port therefor in heat exchange relationship with the first fluid passing through the housing;

f. means for fixedly connecting together the adjacent tube sheets enclosed within said header means; and

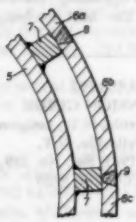
g. guide means extending horizontally between laterally adjacent modules at the ends thereof opposite said header means, said guide means adapted to permit limited pivotal movement between adjacent modules about a longitudinal axis through said horizontally extending guide means.

4,453,593

OIL-HEATED ROLLER

Sven Barthel, Nesbru, and Gunnar Eriksen, Ostenstad, both of Norway, assignors to Thune-Eureka S/S, Tranby, Norway

Filed Jun. 6, 1978, Ser. No. 913,075
Claims priority, application Norway, Jun. 6, 1977, 771969
Int. Cl.³ F28D *11/02*
U.S. Cl. 165—89 **2 Claims**



1. A roller having channels in the roller shell for a flow medium which affects the surface temperature of the roller, characterized by an inner, tight, homogeneous shell of sheet metal, an outer shell of sheet metal of about the same thickness as the inner shell, and intermediate ribs projecting out from the inner shell and welded to both the inner and outer shells to form the desired channels for the flow medium, the ribs running lengthwise along the roller shell, the outer shell being composed of longitudinal shell segments each of whose outer and inner surfaces are cylindrical, and each of which, in the direction of the roller's circumference, has a width which spans the space between two adjacent ribs.

4,453,594

SOLUTION MINING OF COAL BY ELECTROLYSIS

Keith M. Patton, Peoria Heights, Ill., and Frank E. Senftle, Chevy Chase, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 25, 1983, Ser. No. 488,481
Int. Cl.³ C25B *1/02, 3/00, 9/00*
U.S. Cl. 166—248 **10 Claims**

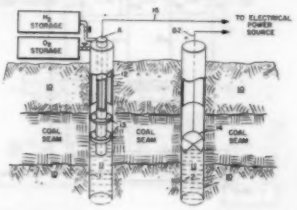
1. A method for the in situ extraction of coal by electrolysis comprising the following steps:

(a) forming a first borehole from the earth's surface into the earth with said borehole transecting the seam of recoverable coal material;

(b) introducing an electrolyte into the first borehole formed in step (a), with said electrolyte contacting the recoverable coal seam;

(c) placing a metallic negative electrode in said first borehole's electrolyte, said negative electrode being spaced from and electrically insulated from the borehole's coal seam and having a sheath surrounding it to direct the flow of emitted gas;

(d) forming at least one additional borehole in the earth spaced from said borehole and extending to said recoverable coal seam;



(e) placing a metallic positive electrode in each of said at least one additional borehole, each of said positive electrodes having means thereon to insure its electrical contact with the recoverable coal seam;

(f) electrically connecting all of said positive electrodes of step (e) serially to an electrical potential difference source at its positive terminal, and also connecting the negative electrode of step (c) to the negative terminal of the same source to thereby cause a positive charge to be placed at the coal seam forming the first borehole; and

(g) recovering the electrolyte and any discharged gases from said first borehole after the applied potential difference has caused an electrolysis reaction to take place therein.

4,453,595

METHOD OF MEASURING FRACTURE PRESSURE IN UNDERGROUND FORMATIONS

Peter L. Lagus, Olivenhain, and Edward W. Peterson, Del Mar, both of Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Filed Sep. 7, 1982, Ser. No. 415,537
Int. Cl.³ E21B *47/06*
U.S. Cl. 166—250 **11 Claims**

1. In a method for accurately measuring breakdown or fracture pressure of an underground formation, the steps comprising

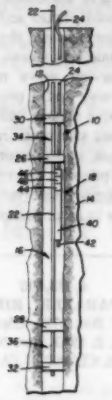
defining an isolated test interval along a borehole extending through the formation with at least one primary packer,

arranging a variable volume device in the borehole in immediate communication with the test interval,

filling the test interval with a substantially incompressible fluid,

expanding the variable volume device and thereby increasing pressure in the test interval to the breakdown or fracture pressure of the formation, and

simultaneously monitoring selected pressure and/or flow conditions within the test interval in order to accurately



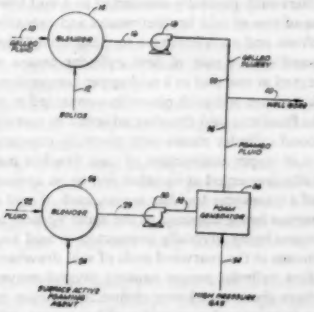
detect the breakdown or fracture pressure of the formation.

4,453,596

METHOD OF TREATING SUBTERRANEAN FORMATIONS UTILIZING FOAMED VISCOUS FLUIDS

Michael W. Conway, and Lewis R. Norman, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 14, 1983, Ser. No. 466,287
Int. Cl.³ E21B *43/04, 43/26, 43/27*
U.S. Cl. 166—278 20 Claims



1. A method of treating a subterranean formation penetrated by a well bore comprising:

providing an admixture of a fluid and a surface active foaming agent;

foaming said fluid admixture by the injection of an elevated pressure gas into said fluid;

providing a gelled fluid;

admixing said gelled fluid with said foamed fluid whereby said foamed fluid is diluted by said gelled fluid to form a gelled foamed fluid; and

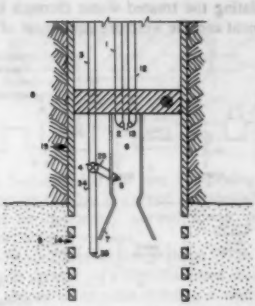
injecting said gelled foamed fluid into said well bore to contact said subterranean formation.

4,453,597

STIMULATION OF HYDROCARBON FLOW FROM A GEOLOGICAL FORMATION

Richard A. Brown, Ewing; Frank E. Caropreso, Skillman, both of N.J.; Charles J. Lymburner, Vancouver, Wash., and Robert D. Norris, Cranbury, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 16, 1982, Ser. No. 349,331
Int. Cl.³ E21B *37/00, 43/24, 43/243*
U.S. Cl. 166—303 10 Claims



1. An apparatus for generating fluid compositions within a borehole extending inward from a surface of the earth and for injecting the compositions into a formation communicating with the borehole comprising:

(a) packer means within the borehole separating the borehole into a first section communicating with the surface and a second section communicating with the formation,

(b) conduit means for conducting at least two fluids from the surface through the packer means into the second section of the borehole,

(c) a heterogeneous decomposition catalyst for liberating energy from a first fluid to provide:

(1) thermal energy, and

(2) a vapor composition within the borehole, and

(d) means to mix a second fluid with the vapor composition to form a fluid composition for delivery from the borehole into the formation.

7. The process for stimulating the flow of a hydrocarbon from a formation in communication with the borehole extending inward from a surface of the earth, said borehole containing a packing means to separate the borehole into a first proximal section communicating with the surface, and a second distal section below said packing means communicating with the formation, said borehole being provided with conduit means for conveying fluid from the surface to said second section, said process comprising:

(a) introducing hydrogen perioxide as a first fluid capable of releasing energy into the second section of the borehole through the conduit means,

(b) contacting the first fluid with a decomposition catalyst, causing liberation of energy and vapor from the first fluid into the second section of the borehole, and

(c) mixing a second fluid into the vapor released in step (b) thus modifying the fluid composition for delivery into the formation.

4,453,598

DRILLING MUD DISPLACEMENT PROCESS

Arnold M. Singer, 3042 Las Palmas, Houston, Tex. 77027, and John E. Oliver, 3752 Del Monte, Houston, Tex. 77019

Filed Sep. 20, 1982, Ser. No. 420,140
Int. Cl.³ E21B *37/00*
U.S. Cl. 166—312 15 Claims

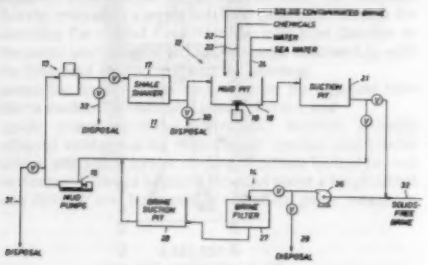
1. A process for eliminating drilling mud solids and oil from

a well system prior to introduction of solids-free completion and packer brines, the steps comprising:

(a) displacing drilling mud from the well system by circulation therein of clean water until a major portion of the drilling mud is removed from the well system and carried in the clean water;

(b) preparing a treated water with the addition of surfactant and alcohol to clean water and subjecting the treated water to agitation and shear mixing in the surface equipment on the well system;

(c) circulating the treated water through both the surface equipment and the wellbore equipment of the well system



to displace therefrom the clean water carrying drilling mud and circulating the treated water in the well system in which completion and packer brines are to be carried until substantially all of the drilling mud is suspended in the circulated treated water;

(d) displacing from the well system to a suitable disposal region, with solids-free clean water, the treated water carrying the drilling mud without interruption of circulation through the well system; and

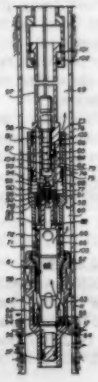
(e) displacing the clean water from step (d) with solids-free completion and packer brine in the parts of the well system receiving the brine from a source exterior of the well system.

4,453,599

METHOD AND APPARATUS FOR CONTROLLING A WELL

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 10, 1982, Ser. No. 376,298
Int. Cl.³ E21B *34/14, 43/. 2, 47/06, 33/12*
U.S. Cl. 166—374 **34 Claims**



1. An annulus flow system for wells comprising,

a packer having seal means thereon adapted to be landed in a well,

a subsurface safety valve associated with said packer,

a flowway through said packer and safety valve providing fluid communication between the exterior of said packer above and below said seal means,

said safety valve having valve means controlling flow through said flowway and a pressure responsive means controlling said valve means, and

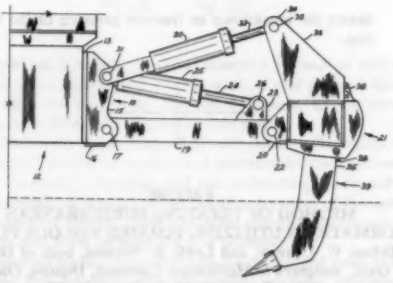
yieldable means urging said pressure responsive means in a downward direction, said pressure responsive means exposed to a control pressure and reciprocating against said yieldable means to move said valve means between open and closed position in response to changes in said control pressure.

4,453,600

SIGNAL SHANK PARALLEL RIPPER APPARATUS

James L. Thigpen, P.O. Box 1786, Cleveland, Tex. 77327

Filed Aug. 2, 1982, Ser. No. 404,402
Int. Cl.³ A01B *13/08*
U.S. Cl. 172—250 **7 Claims**



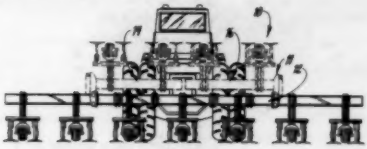
1. Ripper apparatus, comprising a pair of transversely spaced bracket means each having upper and lower connection means and each adapted to be fixed to a support vehicle, a pair of drawbars each pivotally connected to a said lower connection means of one of said bracket means and extending rearwardly therefrom and each having a tool bar connection means at its rearward end, a pair of first cylinder means each pivotally connected at one end to a said upper connection means of said bracket means and each pivotally connected at its other end to a yoke fixed to a said drawbar adjacent its rearward end, a pair of second cylinder means each pivotally connected at one end to a said upper connection of said bracket means and each pivotally connected at its other end to an upwardly extending arm of a transverse tool bar means, each of said upper connection means being disposed at the same vertical level, said tool bar means being pivotally connected to said tool bar connection means at the rearward ends of said drawbars, actuation of said first cylinder means causing pivotal movements of said drawbars about said lower connection means of said bracket means to raise or lower said tool bar means, and actuation of said second cylinder means causing pivotal movements of said tool bar means about its said pivotal connections to said rearward ends of said drawbars, said tool bar means comprising a pair of interchangeable tool bars, the first tool bar having a single blade slot for receiving the shank of a single ripper blade and the second tool bar having plural transversely spaced blade slots for receiving plural ripper blades, whereby connection of said first tool bar to said drawbars provides a ripper apparatus having a single ripper blade and connection of said second tool bar to said drawbars provides a ripper apparatus having plural ripper blades, whereby a single blade ripper apparatus may be readily converted to a plural blade ripper apparatus, and vice versa.

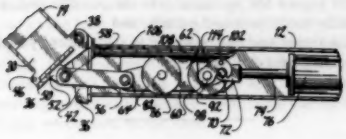
4,453,601

180° FOLDING TOOL BAR

Henry K. Orthman, and Jay Stombaugh, both of Lexington, Nebr., assignors to Orthman Manufacturing, Inc., Lexington, Nebr.

Filed Mar. 24, 1982, Ser. No. 361,342
Int. Cl.³ A01B 73/00
U.S. Cl. 172—311 8 Claims





1. An agricultural implement comprising, a 180° hydraulic folding tool bar including a main tubular frame and at least one tubular wing section being pivotally movable between field and transport positions,

said main frame having an outer end portion with upper and lower ends,

said wing section having an upper inner end portion which is connected to the upper outer end portion of said main frame for pivotal movement about a single pivot axis,

a hydraulic cylinder positioned within said main frame and having one end connected to said main frame,

a wheeled carriage movably mounted in said main frame and having inner and outer ends,

a first linkage means pivotally connected to and extending between the outer end of said carriage and the inner end portion of said wing section,

the inner end of said carriage having a horizontally disposed slot, with inner and outer ends, formed therein which movably receives the other end of said hydraulic cylinder whereby said wing section may pivotally float relative to said main frame when said wing section is in its field position,

said hydraulic cylinder being provided with a horizontally disposed pin which is movably received by said slot,

and means on said carriage for locking said other end of said hydraulic cylinder at the outer end of said slot as said hydraulic cylinder is extended to move said wing section from its field position to its transport position and as said hydraulic cylinder is retracted to move said wing section from its said transport position to its said field position,

said locking means including a latch hook assembly which engages said pin,

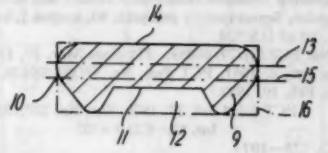
said latch hook assembly comprising at least one latch hook which is pivotally mounted, about a horizontal axis on said carriage and which is movable between a latched position on said hydraulic cylinder pin and an unlatched position off of said hydraulic cylinder pin.

4,453,602

RESILIENT HARROW TINE

Bent H. Larsen, Guldbaek, and Kim I. Christensen, Nibe, both of Denmark, assignors to Kongskilde Koncernselskab A/S, Soro, Denmark

Filed Sep. 16, 1982, Ser. No. 418,621
Claims priority, application Denmark, Sep. 24, 1981, 4223/81
Int. Cl.³ A01B 35/06
U.S. Cl. 172—707 1 Claim



1. A generally S-shaped harrow tine comprising an upper resilient hoop portion (2) that is curved substantially along a circular arc and an oppositely curved lower portion (3) adapted to support a harrow point,

said tine including a cross-sectional shape (9) in said hoop portion (2) and defined by a circumscribed rectangle (16) having two spaced short sides defining a width and two spaced long sides defining a height wherein the width to height ratio is approximately three,

an outwardly-facing upper long side (14) of said cross-sectional shape (9) coinciding with an upper long side of the circumscribed rectangle (16),

a symmetrical generally trapezoidal recess (12) in said cross-sectional shape (9) having one wall coinciding with the lower long side of the circumscribed rectangle (16) and a second wall (11) shorter than said one wall in spaced generally parallel relation thereto,

said recess decreasing inwardly from its one wall to its second wall, and

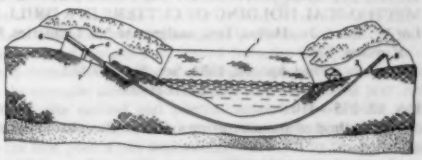
an inwardly-facing lower long side (11) of said cross-sectional shape (9) coinciding with said second wall of said recess (12) effecting a reduction in area of the cross-sectional shape (9).

4,453,603

APPARATUS AND METHOD FOR SELECTED PATH DRILLING

Stephen C. Voss, Lafayette, La.; John W. Voss, Yukon, Okla., and E. Bruce Damron, College Station, Tex., assignors to Voss Development Corporation, Lafayette, La.

Filed Dec. 9, 1980, Ser. No. 214,753
Int. Cl.³ E21B 3/12
U.S. Cl. 175—53 13 Claims



1. A drilling rig for drilling along a selected underground path comprising:

hydraulic pipe handling means including a double acting cylinder and a ram for applying pushing and pulling forces to a string of pipe sections, the pushing forces applied by the cylinder and ram being variable to control the direction of the pipe string along the selected path;

an inclined ramp supporting said pipe handling means for orienting said hydraulic means at a preselected angle; and

rotary coupling means mounted on said ramp for connecting said hydraulic means to a pipe section and applying a rotational motion to said pipe in addition to the pushing and pulling forces applied to the pipe string.

4,453,604

TURBODRILLS

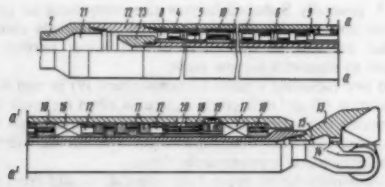
Jury R. Ioanesian, ulitsa Matveevskaya 18 korpus 2, kv. 63, Moscow; Valery V. Popko, ulitsa Garshina, 9a, korpus 5, kv. 35, poselok Tomilino Moskovskoi oblasti, and Radik S. Subkhangulov, Sevastopolsky prospekt, 83, korpus 1, kv. 51, Moscow, all of U.S.S.R.

PCT No. PCT/SU79/00059, 371 Date Mar. 27, 1981, 102(e) Date Feb. 6, 1981, PCT Pub. No. WO81/00428, PCT Pub. Date Feb. 19, 1981

PCT Filed Jul. 27, 1979, Ser. No. 237,132

Int. Cl.³ E21B *4/02*

U.S. Cl. 175—107 **2 Claims**



1. A turbodrill comprising a shell with an opening in the side surface thereof enabling the drilling fluid to pass, a multistage turbine contained in said shell and provided with an inlet chamber and an outlet chamber, said inlet chamber being hydraulically linked up with a drill string, said outlet chamber communicating with an annular space between said shell and the wall of the well by way of said opening in said shell; a hollow shaft supported in said shell by radial bearings and a thrust bearing, the bore of said shaft being hydraulically linked up with the drill string and with a space provided above bit nozzles characterized in that seals (**16**, **17**) are provided in the annular space between said shell (**1**) and said shaft (**6**) to seal off the space (**12**) of the thrust bearing (**11**) from the drill fluid, every one of said seals being made up of at least three members (**28**, **29**, **30**) fitted along the axis of said shaft (**6**) and successively contacting each other to form a closed cavity (**31**) communicating with said thrust bearing space (**12**); means (**32**) of controlling the pressure of lubricant contained in said thrust bearing space, said means (**32**) being fitted to at least one of said contacting members (**29**).

4,453,605

DRILL BIT AND METHOD OF METALLURGICAL AND MECHANICAL HOLDING OF CUTTERS IN A DRILL BIT

Lot W. Short, Jr., Dallas, Tex., assignor to NL Industries, Inc., Houston, Tex.

Filed Apr. 30, 1981, Ser. No. 259,182

Int. Cl.³ E21B *10/52*

U.S. Cl. 175—410 **9 Claims**

1. A method of manufacturing a drill bit comprising the steps of:

forming a drill bit head by a powder metallurgy utilizing a graphite mold having a series of proturbences for forming pockets, the proturbances having external dimensions slightly in excess of the inner dimensions of the finished pockets to allow for shrinkage during the furnacing of the drill bit head; and,

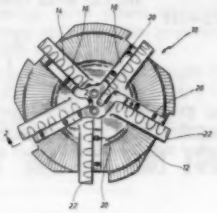
attaching cutters having cutting faces into said pockets by:

forming a plurality of substantially enclosed dimensionally controlled pockets in said drill bit;

placing brazing foil in communication with the backs and bottoms of the cutters having excess foil protruding from above the top of the cutters;

tap fitting the cutters and braze material into the cutter pockets;

metallurgically attaching said cutters to said cutter pockets by heating said drill bit to a predetermined brazing temperature to expand the cutter pockets thus allowing the brazed foil to funnel into the pockets and substantially encompass said cutters; and



shrink fitting said cutter pocket to said cutter by hydrogen cooling said drill bit.

4,453,606

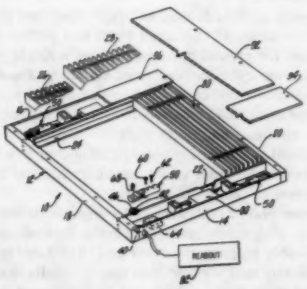
LOW PROFILE WEIGH SCALE

Javad M. Mokhbery, Farmington, and Thomas A. Ulicny, Royal Oak, both of Mich., assignors to GSE, Inc., Farmington Hills, Mich.

Filed Aug. 18, 1982, Ser. No. 409,241

Int. Cl.³ G01G *21/00, 19/02, 21/22*

U.S. Cl. 177—126 **4 Claims**



1. A low profile weight scale for high capacity weighing applications, said weight scale comprising:

a generally rectangular frame having two sides thereof constructed of upwardly extending U-shaped channel members;

a plurality of removable platform members adapted to bridge central portions of the frame;

support means connected to the channel members for supporting the plural platform members;

load cells mounted within the channel members;

covers for covering the channel members; and

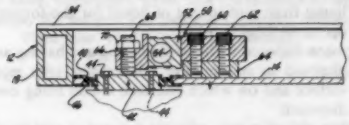
whereby the platform members and covers may be easily disassembled for manually transporting the weigh scale to another location and for enabling easy access to the load cells.

4,453,607

WEIGHT SCALE WITH SIDE LOAD PROTECTION

Frederick J. Zink, Redford, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Aug. 18, 1982, Ser. No. 409,240
Int. Cl.³ G01G 21/02, 3/14
U.S. Cl. 177—179 6 Claims



1. A weigh scale comprising:

a base having a bottom portion with a plurality of openings therein;

foot members aligned with the openings in the base, adapted to be fixed to a supporting surface for the scale and raise the base a given distance above the supporting surface;

at least one flexure beam to sense applied weight fixed at one end to the base, with the other end of the beam resting on upper portions of an adjacent foot member; and

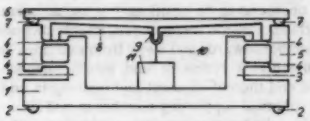
resilient coupling members connected between the foot members and the base bridging said openings thereby serving to minimize damage to the beam due to side shock loads introduced to the base.

4,453,608

MASS AND FORCE METER

Johannes Wirth; Mario Gallo, both of Zürich, and Kaspar Saner, Dübendorf, all of Switzerland, assignors to Wirth Gallo & Co., Zurich, Switzerland

Filed Jul. 1, 1982, Ser. No. 394,308
Claims priority, application European Pat. Off., Aug. 1, 1981, 81106049.0
Int. Cl.³ G01G 3/12, 3/16, 3/00, 3/14
U.S. Cl. 177—210 FP 5 Claims



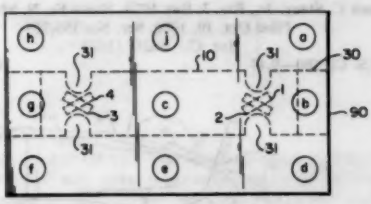
1. In a mass and force meter, a frame, a load support with load points on its lower side, a measuring system, four flat springs mounted pairwise one above the other and having each one end fitted to said frame, two brackets, the other ends of said flat springs being fitted into said brackets so as to guide them parallely, said load points resting directly on said brackets, a flexible transmission element connected in its middle to said measuring system, said flexible transmission element consisting of two springs linked to each other by means of flexible articulations to a rigid rod, said springs having their ends fitted into said flat springs, said flat springs compensating the main share of the load, said flexible transmission element transmitting to said measuring system the remaining load-proportional share of the load.

4,453,609

COMPENSATED LOAD CELL

Neil C. Griffen, and David M. Behrman, both of Columbus, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed Mar. 15, 1982, Ser. No. 358,195
Int. Cl.³ G01G 3/14; G01L 1/22
U.S. Cl. 177—211 20 Claims



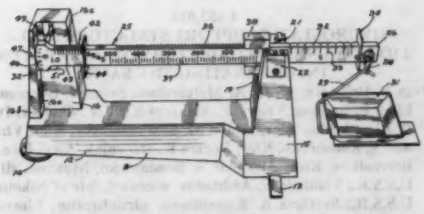
1. An improved method of compensating a weighing mechanism having a single beam load cell member, comprising the steps of mounting a first strain gage on one side of the beam member near an end thereof, mounting a second strain gage on the other side of the beam near the same end, positioning said first and second strain gages at opposite angles to the longitudinal axis of the beam to increase the sensitivity of said gages to off-center loading of the beam, mounting third and fourth strain gages near the other end of the beam, arranging the gages in an electrical bridge circuit, and connecting a resistor network to one or more of the gages to make the output of the bridge circuit substantially independent of the position of a weight along at least one direction of the weighing mechanism.

4,453,610

BEAM SCALE WITH THREE POISES

Clarence E. Purdie, deceased, late of Faribault, Minn. (by Irene D. Purdie, executor), assignor to Gopher Shooter's Supply Company, Incorporated, Faribault, Minn.

Filed Aug. 27, 1982, Ser. No. 412,159
Int. Cl.³ G01G 1/36, 23/14
U.S. Cl. 177—247 6 Claims



1. A scale comprising a base that includes a first upright post and a second upright post spaced from the first post, an elongated beam having an intermediate portion, a first end portion on the opposite side of the first post from the second post, and an opposite second end portion adjacent the second post, means for pivotally mounting the beam intermediate portion on the first post, a pan dependingly mounted by the beam first end portion, cooperating means on the beam second end portion and on the second post for indicating when the scale is in balance, said beam having a first series of graduated indicia between the pivot means and the beam first end portion, a second series of graduated indicia between the second post and the pivot means and a third series of graduated indicia between the second series of indicia and the beam second end portion and closely adjacent the beam second end portion, a first poise slidably adjustably on the beam relative to and adjacent the first series of indicia, a second poise slidably adjustably on the

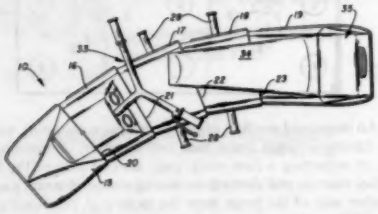
beam relative to and adjacent the second series of indicia, and a third poise slidably adjustable on the beam relative to and adjacent the third series of indicia, the third series of indicia being graduated for units of weight that are smaller than the units of weight of each of the first and second series of indicia.

4,453,611

TERRAIN VEHICLE HAVING A SINGLE, LATTERALLY BENDABLE TRACK

Jack C. Stacy, Jr., Rte. 3, Box 107A, Santa Fe, N. Mex. 87501

Filed Oct. 10, 1980, Ser. No. 195,754
Int. Cl.³ B62D *11/20*
U.S. Cl. 180—9.44 **11 Claims**



5. An all terrain vehicle having a single laterally bendable track which supports a vehicle main body by means of a plurality of track wheels;

said main body includes a plurality of body sections series connected together in a manner which admits pivotal movement in a horizontal plane between adjacent body sections;

a dual wheel for each body section, means by which ech body section is supported from said dual wheel; means by which said track is captured to said dual wheels;

steering means by which all body sections pivot simultaneously, thus bending the track laterally, and causing the vehicle to change course of travel;

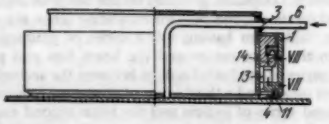
said steering means includes a diagonal linkage means interconnecting alternate sides of alternate body sections; and means by which two adjacent body sections are caused to pivot respective to one another.

4,453,612

HYDROSTATIC SUPPORT STRUCTURE AND LIQUID-CUSHION LOAD-CARRYING APPARATUS INCORPORATING THE SAME

Ivan Y. Balandin; Alexei A. Malyarchuk; Sergei I. Gerasimov; Lidia P. Suslova; Valery V. Alexeenko, all of Nikolaev; Ivan P. Kharchenko, Kiev; Vadim M. Sopryazhinsky, Kiev; Vladimir N. Kononenko, Kiev; Roman K. Stepanjuk, Kiev; Ivan N. Bereznikov, Kiev; Alexandr S. Bondarenko, Moscow, all of U.S.S.R.; Vladimir N. Andrianov, deceased, late of Nikolaev, U.S.S.R.; Svetlana A. Kamentseva, administrator, Moscow, and Valery V. Andrianov, administrator, Nikolaev, both of U.S.S.R., assignors to Nikolaevsky Korablestroitelny Institut Imeni Admirala S.O.Makarova, Nikolaev, U.S.S.R.

Filed Feb. 23, 1982, Ser. No. 351,409
Int. Cl.³ B60V *1/04*
U.S. Cl. 180—124 **14 Claims**



1. In a liquid-cushion load-carrying apparatus for moving a load along a bearing surface, the apparatus having a framework for the load to be disposed thereon, a source of liquid to provide a liquid cushion, and at least one hydrostatic support structure comprising:

a housing which is disposed on said bearing surface and which has an inner surface and an outer surface;

an inner space defined by said inner surface of said housing and by said bearing surface and intended to be fed with a liquid from said source of liquid for the formation of an operative liquid cushion;

a piston disposed within said housing and having an end face disposed in an opposite relationship with said bearing surface and on which end face a load being conveyed is disposed;

a first sealing member rigidly secured to said housing adjacent said bearing surface and defining a liquid cushion being formed along the perimeter of said inner space adjacent said bearing surface;

a second sealing member disposed on said piston so as to seal the gap between said housing and said piston; and

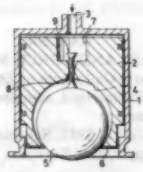
at least one stop defining the extreme lower position of said piston and positioned between said piston and said housing and serving to restrict the downward movement of said piston, and a shock-absorbing element of said stop made in the form of at least one compression spring disposed on said stop so as to provide for a smooth downward movement of said piston.

4,453,613

LOAD SUPPORTING DEVICE

Sven R. V. Gebelius, Drottningholmsvägen 195, Bromma, Sweden S-161 36

Filed Aug. 26, 1981, Ser. No. 296,341
Int. Cl.³ B60V *1/00*
U.S. Cl. 180—125 **11 Claims**



1. A load supporting device to facilitate transport of a load along a supporting surface comprising a cylinder member having an open end to be positioned in use adjacent the supporting surface, a piston member restrictably movable in said cylinder member towards and away from said open end of said cylinder member, a recess in said piston member opening through the end thereof adjacent said opening in said cylinder member, a spherical supporting member in said recess, an inlet through said cylinder member communicating with the other end of said piston member opposite to said open end and adapted to be connected to a gas source under pressure to supply said gas to said other end of said piston member, a channel in said piston member communicating between said recess and said other end of said piston member, said spherical supporting member being movable in said recess into and from a position extending partly through said opening in said piston member so that pressurized gas supplied to the inlet will move the piston member in the cylinder member and/or the spherical supporting member in said recess to a contact position where the spherical supporting member contacts the supporting surface and will flow past said spherical supporting member through said opening in said recess to retain said spherical supporting member out of contact with a surrounding wall portion in said recess, and a longitudinally extending valve member in said channel adapted to close said channel from

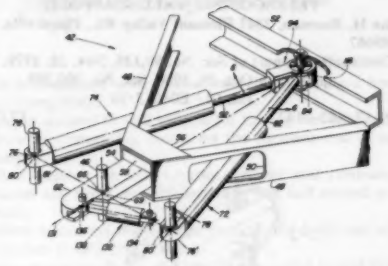
flow communication with said inlet when said spherical supporting member is in an outer restricted position where it extends from the piston member a maximum distance.

4,453,614

STEERING ARRANGEMENT FOR AN OFF-HIGHWAY ARTICULATED VEHICLE

James R. Allen, Bettendorf, Iowa, and Christopher A. Myers, Champaign, Ill., assignors to Deere & Company, Moline, Ill.

Filed Mar. 19, 1982, Ser. No. 360,022
Int. Cl.³ B62D *5/10*
U.S. Cl. 180—139 **11 Claims**



1. An off-highway articulated vehicle for traversing an uneven ground surface comprising:

front and rear bogies, each having at least one pair of laterally spaced wheels for supporting the bogie above the ground surface;

means, including a hitch pivot, for pivotally connecting the rear bogie to the front bogie so that relative movement may take place between the bogies, including pivoting about an upright axis passing through the hitch pivot for steering the vehicle and oscillation about a generally fore-and-aft oscillation axis for conforming the vehicle to the uneven surface; and

power means for effecting the pivoting about the upright axis, including first and second hydraulic cylinders each having a first end pivotally connected to the front bogie, at opposite sides of the hitch pivot respectively, and a second end pivotally connected to the rear bogie so that the respective longitudinal axes of the hydraulic cylinders intersect at and share a common pivot center positionally fixed with respect to the rear bogie, the connections of the hydraulic cylinders to the rear bogie including universal pivot means for defining the common pivot center and effective to permit oscillation of the rear bogie relative to the front bogie without disturbing the spatial relationship of the first cylinder to the second cylinder so that said oscillation does not distort the steering effect of the cylinders.

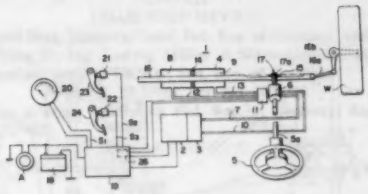
4,453,615

POWER STEERING SYSTEM FOR ROAD VEHICLES

Hirotaka Kanazawa; Takeshi Tanaka, both of Hiroshima; Michio Abe, and Naoyuki Maeda, both of Kasugai, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima and Tokai TRW & Co., Ltd., Kasugai, both of, Japan

Filed Jun. 2, 1982, Ser. No. 384,242
Claims priority, application Japan, Jun. 3, 1981, 56-86287
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—142 **7 Claims**

7. A vehicle power steering system comprising hydraulic pump means, driving means for driving the hydraulic pump means, power cylinder means adapted to be connected with said hydraulic pump means so as to be supplied with pressurized hydraulic fluid for providing an assisting steering force, means for detecting operation of at least one of a vehicle power clutch disconnecting means and a vehicle brake means and producing an operation signal when at least one of said vehicle power clutch disconnecting means and said vehicle brake means is operated, and control means responsive to said operation signal for actuating said driving means when said operation signal is received from said detecting means to thereby operate the hydraulic pump means and for stopping said driving means after a predetermined time after said operation signal is terminated.

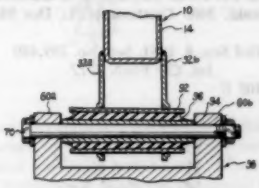


4,453,616

REAR SUSPENSION SYSTEM FOR A MOTOR-TRICYCLE

Mark Porter, El Cerrito, Calif., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 19, 1982, Ser. No. 368,801
Int. Cl.³ B62D *61/08*
U.S. Cl. 180—210 **4 Claims**



1. A motorized tricycle suspension system comprising a frame with an elongated engine unit mounted therein, a rear axle transversely supported on the rear end of said elongated engine unit, a wheel on each of the opposite ends of said rear axle, elastic means for transversely connecting the front of said elongated engine unit to said frame whereby said frame and engine unit are tiltable relative to each other, said elastic means comprising a first and outer tube affixed to said frame, a second and inner tube affixed to said engine unit, said second tube extending through said first tube, and elastic rubber-like means interposed between said inner and outer tubes to be deformed by relative motion between said tubes.

4,453,617

MULTI-AXLE DRIVING MECHANISM FOR AGRICULTURAL CARRIER

C. H. Wu, Hsiang San Hsiang No. 30, Hsiang San Keng, Hsinchu, Taiwan

Filed Apr. 9, 1982, Ser. No. 366,940
Int. Cl.³ B60K *17/34*
U.S. Cl. 180—247 **3 Claims**

1. A multi-axle driving and support mechanism for an agricultural carrier, comprising, in combination:

(a) longitudinally positioned front and rear frames (1,3),

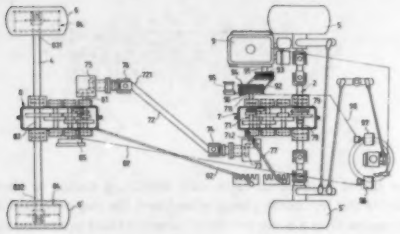
(b) motive means (9) carried on one of said frames,

(c) front and rear transmissions (7,8) carried on said respective front and rear frames and operatively connected to said motive means,

(d) said front transmission having a transversely extending

clutchless output shaft (78) having terminus ends mounting front wheels (5,5') thereon, and with a differential (79) being disposed in said transmission output shaft to form a multi-part front driving axle (2),

(e) said rear transmission having a transversely extending continuous unitary output shaft (83) having terminus ends



mounting rear wheels (6,6') thereon, and forming a unitary rear driving axle (4),

(f) lost-motion means (84,84') connecting said rear wheels to said continuous unitary output shaft,

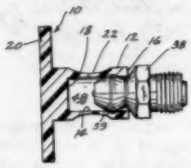
(g) and transmission control means (77,82) for selectively driving either or both said output shafts.

4,453,618

GREASE FITTING COVER AND LOCATOR

George Economaki, 3405 Crestmoore Pl., Des Moines, Iowa 50310

Filed Sep. 4, 1981, Ser. No. 299,480
Int. Cl.³ F16N 3/12
U.S. Cl. 184—105 B 1 Claim



1. The combination of a grease fitting head with a grease fitting cover and locator, comprising,

an arcuate-shape grease fitting head having a maximum diameter and a longitudinal length,

a grease fitting cover and locator means comprising a generally cylindrical shaped tubular member having an axially located aperture therein adapted to receive said grease fitting, said aperture being of constant diameter and having a longitudinal length substantially twice the longitudinal length of said grease fitting and a diameter less than that of said maximum diameter of said grease fitting,

said grease fitting head being completely frictionally inserted into said aperture and creating an air pocket in said aperture having a longitudinal length substantially equal to the longitudinal length of said grease fitting head so that a significant air space will be created beyond the inner end of said grease fitting head to provide a source of negative air pressure and to yieldably resist the removal of said grease fitting cover and locator means from said grease fitting head, and

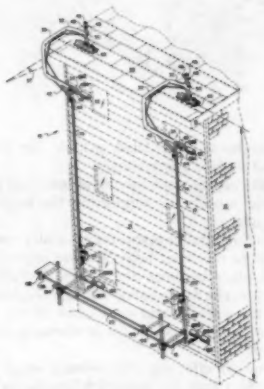
an outwardly extending flange on one end of said grease fitting cover and locator means opposite to said air space, said flange having a width at least twice the diameter of said tubular member and being comprised of a bright colored material to facilitate the grasping and visible location of said grease fitting cover and locator means.

4,453,619

TELESCOPING WALL SCAFFOLD

John H. Bierman, 2347 Pleasant Valley Rd., Placerville, Calif. 95667

Continuation-in-part of Ser. No. 98,126, Nov. 28, 1979. This application Oct. 30, 1980, Ser. No. 202,299
Int. Cl.³ E04G 3/10
U.S. Cl. 182—142 12 Claims



1. A telescoping scaffold comprising:

suspension means for hanging said scaffold from a structure having an upwardly extending surface such that said scaffold is held approximately adjacent said surface;

a base member removably attached to said suspension means, adapted to extend downwardly along said surface therefrom when said suspension means is positioned to suspend said scaffold from said structure;

telescoping member means mechanically telescopically adapted to said base member for telescopic movement in relation thereto;

platform support means secured to said telescoping member means to support a platform;

a spacer member adapted to said telescoping member means to adjustably extend away therefrom toward said surface;

wheel means rotatably adapted to said spacer member for rolling contact with said surface;

winch means secured to said telescoping member means, said winch means having a reel with a line extending upwardly along the length of said scaffold, the running end of said line being secured to said scaffold proximate said suspension means so that upon operation of said winch means said telescoping member means selectively raises and lower along said surface; and

a cable guide slideably mounted along the base member, said guide having an aperture through which the line passes to be held in proximity with the base member, and locking means to secure said guide at a preselected point along the base member.

4,453,620

AUTOMATIC SAFETY BRAKE ACTUATION TONGUE FOR TOWED VEHICLES

William G. Angus, Ames, Iowa; Richard D. Rathe, Peoria, and Daniel J. Fox, Galva, both of Ill., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 15, 1982, Ser. No. 357,883
Int. Cl.³ B60T 7/20
U.S. Cl. 188—112 R 7 Claims

1. In combination with a wheeled vehicle having a brake system, comprising,

a tongue secured to said vehicle for towing the vehicle,

a drawbar connecting means on the forward end of said tongue,

a slide member on said tongue adjacent said connecting means and being movable between first and second positions,

resilient means on said tongue to yieldably hold said slide member in said first position,

brake control means on said tongue connected to said brake system and being movable between a braking position and a release position,

said slide member being operatively connected to said brake control means so that when said slide member is in said first position, said brake control means is in its braking position, and vice versa,

and said slide member being so positioned with respect to said drawbar connecting means that said slide member will be moved from said first position to said second position when a drawbar is connected to said drawbar connecting means.

4,453,621

DRUM BRAKE SHOE AND LINING ASSEMBLY AND METHOD OF MAKING SAME

Edward H. Warwick, Englewood, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 7, 1982, Ser. No. 385,494
Int. Cl.³ F16D 69/04
U.S. Cl. 188—250 G 1 Claim

1. A drum brake shoe and lining assembly comprising:

a shoe having a rim and a web, said rim being a unitary strip transversely bent and formed to a generally arcuate configuration defined by a series of chords of an arc providing a series of planar rim sections angularly joined together, said web having an unbroken edge chordally configured to mate with the inner surfaces of said planar rim sections and being secured to the inner surface of said rim along said web edge;

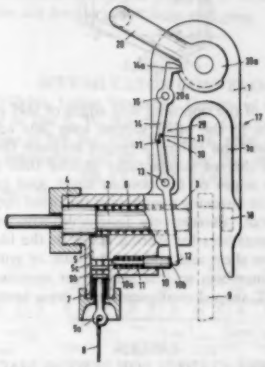
and lining providing friction braking material, said lining being a series of arcuately spaced lining segments each having a surface on one side complementary to the outer surface of a planar rim section and secured thereto, said lining segments each having another side opposite said one side complementary to the friction braking surface of a drum to be braked.

4,453,622

LOAD STOP DEVICE

Ferdinand Betz, Marburg/Lahn, Fed. Rep. of Germany, assignor to Firma Dr.-Ing. Ludwig Müller & Söhne-Gesellschaft für Bautechnik mbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 287,906
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030039
Int. Cl.³ F16F 65/02
U.S. Cl. 188—265 14 Claims



1. Load support apparatus comprising a housing, suspension means mounted on said housing for movement between an operative load suspension position and an inoperative relaxed position, a holding bolt displaceably mounted in said housing for movement along a displacement path between a first position in which a load is supported by the holding bolt and a second position in which the load is released from the bolt, displaceable locking bar means mounted in said housing for movement transversely to the displacement path of the holding bolt for engaging said bolt to lock the same in said first position, catch means displaceably mounted on said housing for locking the locking bar means, and control means responsive to the position of the suspension means for displacing the catch means to lock the locking bar means in its position in which the holding bolt is locked in said first position thereof when the suspension means is in its operative load suspension position.

4,453,623

BAG HAVING A COVER MEMBER FOR SHOES AND OTHER ITEMS

Takeshi Horii, Hirakata, Japan, assignor to Ace Company, Ltd., Osaka, Japan

Filed Apr. 12, 1982, Ser. No. 367,610
Claims priority, application Japan, Apr. 14, 1981, 56-54258[U]
Int. Cl.³ A45G 3/12, 13/02
U.S. Cl. 190—102 2 Claims

1. A bag, comprising:

a main body, said main body including:

a bottom surface having opposing first long side edges and opposing first short side edges,

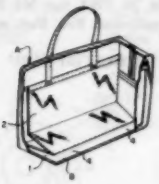
opposing long side walls upstanding from said first long side edges and opposing short side walls upstanding from said first short side edges; one of said long side walls having

first fastening members adjacent the top end thereof; and

a cover member, said cover member including:

a stiff cloth-covered bottom sheet having opposing second long side edges and opposing second short side edges of dimensions to substantially cover said bottom surface, fixed to said bottom surface, said bottom sheet having second fastening members along one of said second long side edges, and

a cover cloth having opposing side edges of length equal to the length of the second long side edges of said bottom



sheet, one of the opposing side edges of said cover cloth being sewn to the other second long side edge of said bottom sheet and having a length between the opposing side edges thereof substantially greater than the second short side edges of the bottom sheet, said cover cloth having third fastening members at the other opposing side edge thereof, alternatively fastenable with said second fastening members for storing shoes or the like between said bottom sheet and said cover cloth, or with said first fastening members so that said cover member adopts a generally L-shaped configuration in cross section.

4,453,624

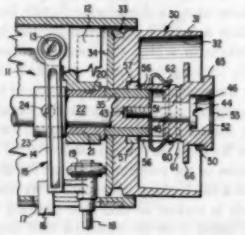
HANDWHEEL CLUTCH FOR SEWING MACHINES

Thomas G. Graham, Emerson, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,667

Int. Cl.³ F16D *11/00*

U.S. Cl. 192—67 R **5 Claims**



1. In a sewing machine having a main shaft, a driven wheel freely journalled relatively to said main shaft, operator influenced clutch means for selectively drivingly engaging or disengaging said driven wheel and said main shaft, said clutch means comprising:

a clutch element shiftably supported for sliding movement axially of said main shaft,

complemental axially engageable clutch surfaces formed on said clutch element and on said driven wheel, detents formed on said clutch element spaced apart axially of said main shaft,

and an interlock element formed with surfaces adapted to interlock rotationally with said main shaft, guide surfaces on said interlock element slidably accommodating said clutch element in rotationally interlocked relation with said main shaft, and a spring finger on said interlock element cooperatively related with said clutch element detents to locate said clutch element selectively into or out of an axial position of engagement of said complemental clutch surfaces.

4,453,625

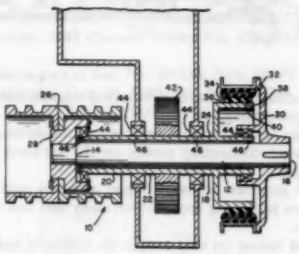
CONCENTRIC SHAFT DRIVE

Charles G. Franks, Pampa, Tex., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 7, 1981, Ser. No. 309,215

Int. Cl.³ F16D *25/04*

U.S. Cl. 192—88 B **9 Claims**



1. A shaft drive arrangement comprising:

(a) an inner shaft having a first end and a second end;

(b) an outer shaft concentric about the inner shaft having a first end, a second end, and a middle;

(c) a clutch means for transmitting rotary power between the inner shaft and the outer shaft with said clutch means cantileverly mounted on the second end of each shaft;

(d) a first transmission means for transmitting torque to said inner shaft connected to the first end of the inner shaft; and

(e) a second transmission means for transmitting torque mounted about the middle of the outer shaft,

(f) first means for mounting said first transmission means including bearing means whereby radial and bending loads on said first transmission means are removed from said inner shaft,

(g) wherein said clutch means comprises a first member for transmitting torque from said inner shaft to a clutch engaging and disengaging means, and a second clutch member for transmitting torque from the clutch engaging and disengaging means, and

(h) second means for mounting said first member including bearing means whereby radial and bending loads on said first member are transmitted and thereby removed from said inner shaft.

4,453,626

VIBRATORY FEEDING APPARATUS

William J. Roberts, Terryville, and Robert J. Ensminger, Winchester, both of Conn., assignors to The Arthur G. Russell Company, Incorporated, Bristol, Conn.

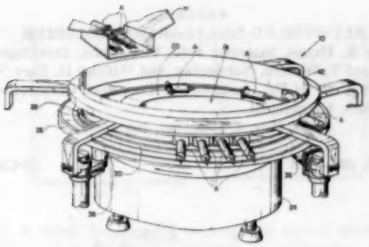
Continuation of Ser. No. 220,366, Dec. 29, 1980, abandoned. This application Apr. 8, 1983, Ser. No. 481,800

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—391 **12 Claims**

1. Apparatus for orienting and feeding articles, each of said articles having an axially elongated body portion and a radially enlarged portion axially spaced from at least one end of the body portion, said apparatus comprising a feeder bowl, having a vertical axis, for containing a supply of the articles and including a generally helical track surface extending along the inner periphery of said bowl which track surface has a terminal portion at the upper edge portion of said bowl which terminal portion has a radially outer arcuate edge free of any portion of said bowl extending upwardly therefrom and which terminal

portion of said track surface extends generally inwardly and upwardly from said arcuate outer edge, feeder bowl drive means for vibrating said bowl to move articles onto said track surface and along said track surface in one direction of movement about said vertical bowl axis and in generally axial end-to-end relation to each other, said terminal portion of said track surface having a downstream end defining the limit of its extension in said one direction of movement about said vertical bowl axis, a ring concentric with said vertical bowl axis surrounding the upper edge portion of said bowl and having a generally upwardly facing annular article supporting surface with an inner circular edge closely adjacent to said outer arcuate edge of said terminal portion of said track surface, said annular article supporting surface of said ring being generally in line with said terminal portion of said bowl track surface, as seen on a vertical plane passing through said supporting surface and said terminal portion of said track surface and containing said vertical bowl axis, and extending generally outwardly and downwardly from its said inner circular edge to form essentially a generally radially outwardly extending continuation of said terminal portion of said bowl track surface for receiving articles after they move radially outwardly beyond said outer edge of said terminal portion, means supporting said ring for rotation about said vertical bowl axis relative to said bowl, ring drive means for rotating said ring independently of the vibratory movement of said bowl continuously in said one direction of movement about said vertical bowl axis, and a stationary arcuate baffle concentric with said vertical bowl axis extending circumferentially along the entire length of said



terminal portion of said track surface and also extending for some distance beyond said downstream end of said terminal portion of said track surface in the direction of rotation of said ring, said baffle having a radius of curvature larger than the radius of curvature of said inner circular edge of said ring so as to be positioned radially outboard of said terminal portion of said track surface and above said supporting surface of said ring, said baffle further having a lower edge spaced above said supporting surface of said ring which lower edge because of the relative sizes of the radii of curvature of said baffle and said inner edge of said ring is located radially a substantial distance outwardly from said inner edge of said support surface of said ring so that a substantial portion of said supporting surface is located radially inside of said baffle and another substantial portion of said supporting surface is located radially outside of said baffle, the vertical spacing between said lower edge of said baffle and said supporting surface of said ring being such as to allow the body portion of each article to pass through the space so formed and to prevent passage of its enlarged portion, whereby after an article moves radially outwardly from said terminal portion of said bowl track surface to said supporting surface of said ring said article will be moved about said vertical axis by said ring and as a result will have centrifugal force applied thereto causing said body portion of the article to swing radially outwardly through the space between said lower edge of said baffle and said supporting surface while its radially enlarged portion is restrained against further radial outward movement by engagement with said baffle, said baffle being so radially spaced outwardly from said inner edge of said supporting surface of said ring and said ring extending a substantial distance radially outwardly beyond said baffle that after an article has its body portion swung radially outwardly through said space said portion of said supporting surface located radially inwardly of said baffle is of sufficient radial extent as to entirely receive said radially enlarged portion of said article and said body portion is underlaid by a portion of said ring located radially outwardly of said baffle whereby said article after its body portion has swung through said space is supported entirely by said ring at at least two points along its length on opposite sides of said baffle and is free of contact with said terminal portion of said bowl track surface, said baffle some distance circumferentially downstream beyond said downstream end of said terminal portion of said track surface having a discharge point at which said lower edge no longer restrains said enlarged portions of said articles so that said articles are free to move from said ring.

4,453,627

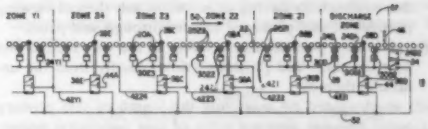
ACCUMULATOR CONVEYOR

John J. Wilkins, Union Township, County of Clermont, Ohio, assignor to The E. W. Buschman Co., Cincinnati, Ohio

Continuation of Ser. No. 119,817, Feb. 8, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 285,225

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **8 Claims**



1. In a live roller accumulator conveyor including a frame and a plurality of rollers rotatably mounted on said frame and defining a plurality of successive accumulator zones, the combination of

(a) drive means for each of said zones including at least one power transfer device mounted on said frame for movement between a driving position with respect to at least one roller in said zone and a non-driving position,

(b) shifting means for each of said power transfer devices normally maintaining said device in the driving position thereof,

(c) sensor means for each said zone for sensing the presence of an article in said zone,

(d) primary control means connecting said sensor means for each said zone with said shifting means for the adjacent zone upstream thereof and responsive to activation of the associated said sensor means by an article in said zone to move the associated said power transfer device to non-driving position and thereby to respond to the presence of an article stopped in a downstream one of said zones by causing articles to accumulate in successive zones upstream from said one zone, and

(e) a plurality of secondary control means each interconnecting said primary control means for a group of successive said zones and thereby defining a corresponding plurality of consecutive said zone groups,

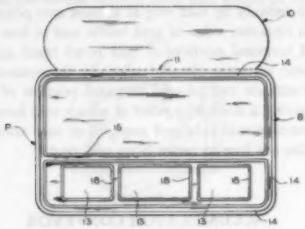
(f) each said secondary control means including means operative to override the resulting group of said primary control means in response to movement of the stopped article from the immediately adjacent said zone downstream from said group controlled thereby and thereby causing all articles in said group of zones controlled thereby to be moved forward substantially in unison, whereby a gap is created between the trailing article moving in one of said groups and the leading article in the adjacent said group upstream therefrom.

4,453,628

BACON PACKAGE INNER PAD

Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Apr. 1, 1983, Ser. No. 481,296
Int. Cl.³ B65D *25/54;* **B65B** *25/06, 3/00*
U.S. Cl. 206—45.31 **3 Claims**



1. An inner pad for holding and displaying packaged articles, such as slices of bacon, within an outer package, said pad formed of molded material, such as plastic or paperboard, and comprising:

(a) a relatively thin flat primary panel having adjacent one side thereof a plurality of window openings extending therethrough for having adjacent one side thereof viewing portions of said packaged articles through said panel;

(b) peripheral protrusions extending all the way around said primary panel and projecting downwardly from the underside thereof;

(c) an elongated rib extending the length of said primary panel between opposed sides of said peripheral protrusions; and

(d) protrusions projecting downwardly from the underside of said primary panel and located adjacent said window openings which maintain the portion of said panel surrounding said window openings spaced an appreciable distance above a surface on which said panel may be supported.

4,453,629

MASK DISPLAY PACKAGE

Mel Goldberg, c/o Topstone Industries, Inc., 2 Augusta Dr., Danbury, Conn. 06810

Filed Dec. 17, 1982, Ser. No. 450,725
Int. Cl.³ B65D *65/16*
U.S. Cl. 206—45.33 **3 Claims**

1. A mask display package, comprising:

(a) a three-dimensional, forwardly projecting face mask;

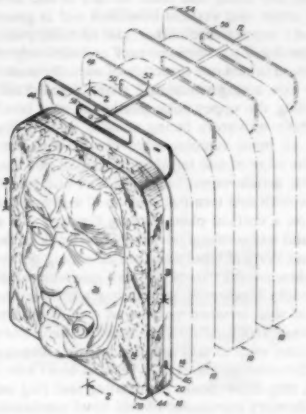
(b) a front package section having a centrally located forwardly projecting first mask area substantially corresponding, in three dimensions, to said face mask;

(c) a rear package section having a centrally located forwardly projecting second mask area substantially corresponding, in three dimensions, to said face mask;

(d) said first mask area being transparent;

(e) said first mask area and said second mask area, defining a relatively thin, hygienic, three-dimensional holding pocket for realistically displaying said face mask in three dimensions; and

(f) the back of said second mask area of said rear package section being dimensioned to define a nesting cavity for



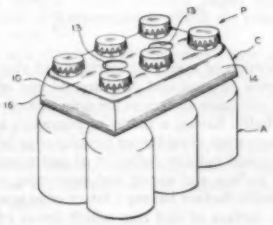
accommodation of the front of said first mask area of said front package section of a second mask display package.

4,453,630

REINFORCED MULTI-ARTICLE CARRIER

Charles R. Helms, Malvern; John V. Bousum, Downingtown; Richard T. Walters, Norristown, and William H. Carr, West Chester, all of Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed Nov. 4, 1982, Ser. No. 439,085
Int. Cl.³ B65D *71/00, 25/22*
U.S. Cl. 206—158 **30 Claims**



1. A carier for holding a plurality of articles, such as bottles or cans, which have adjacent the upper ends of their bodies radially outward extending portions, such as caps, beads or chimes, and which are arranged in at least one row, said carrier comprising:

(a) a shell formed from a unitary blank of a relatively thin printable sheet material and including a relatively flat, generally rectangular top panel having opposed pairs of side and end panels foldably joined to the side and end edges thereof and extending downwardly and outwardly therefrom;

(b) said top panel covering portions of said articles and having extending therethrough:

(i) a plurality of first openings for receiving upper portions of said articles with said radially outward extending portions thereof positioned on the upper side of said shell;

(ii) a pair of spaced second openings for accommodating the grasping and lifting of said carrier;

(c) a unitary, molded plastic, skeletal frame being in contact with portions of the underside of said shell and being bonded thereto in critical areas providing a reinforcement arrangement, said frame including:

(i) generally round ring elements surrounding each of said first openings and disposed therein in reinforcing engagement presenting a smaller opening for engagement with said articles;

(ii) generally straight inner strut elements connecting certain of said ring elements to each other;

(iii) a generally rectangular outer rim element surrounding said shell top panel and interconnecting outer portions of certain of said ring elements;

(iv) corner rib elements extending downwardly from the corners of said outer rim element between adjacent side and end panels of said shell;

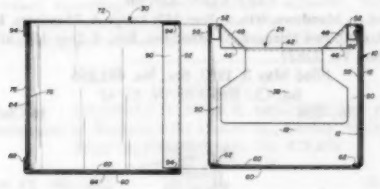
(v) lower flange elements joined to lower ends of respective corner rib elements and extending transversely therefrom to form therewith generally T-shaped structures.

4,453,631

PHONOGRAPH RECORD ALBUM AND SLIP CASE

Frederick K. Mark, Lebanon, Pa., assignor to Lebanon Packaging Corporation, Jonestown, Pa.

Filed Dec. 16, 1982, Ser. No. 432,654
Int. Cl.³ B65D *85/30, 85/57*
U.S. Cl. 206—313 **9 Claims**



1. A blank for forming phonograph record albums from sheet paper board stock comprising in combination, a pair of similar generally rectangular side panels foldably connected along one edge and also having narrow rectangular panels along one end and opposite side edge of one side panel adapted to be secured to the opposite side panel to form a relatively flat container of limited thickness and having bottom flaps foldably connected to a lower edge of said side panels to form one closed end and an opposite open end to receive phonograph records, the upper edges of said side panels having similar relatively long access notches extending a limited distance into the edges of the side panels and defining said open end, said notches being formed by tongues of the material integral with and extending outwardly beyond said edges of the side panels forming the open end of the container and opposite sides of said tongues having incisions extending thereinto toward each other and angularly in a direction away from the outer edges of said tongues and additional parallel incisions extending into said panels from the inner ends of said angular incisions to form a stem of a generally tee-shaped tongue of substantial area and width, each tee-shaped tongue on said side panels being foldable inwardly respectively onto a common surface of said side panels and adapted to be secured thereto by adhesive to form a smoothly rounded edge along a fold defining the innermost boundary of said access notches, and said additional parallel incisions also forming one edge of small flaps foldable onto said common surface of said side panels along lines extending angularly from opposite ends of the fold of each tee-shaped tongue outwardly to the outer edge of each side panel which defines said opening whereby when said panels and small flaps have been folded smooth rounded edges for the entire length of said access notches are provided and also reinforcement of very substantial areas of said side panels is provided by doubling the thickness thereof where said tee-shaped tongues are disposed.

4,453,632

PROTECTIVE COVER FOR GOLF CLUBS

William J. Clower, P.O. Box 1128, Amelia Island, Fla. 32034

Filed Oct. 27, 1983, Ser. No. 545,922
Int. Cl.³ A63B *55/00*
U.S. Cl. 206—315.4 **9 Claims**

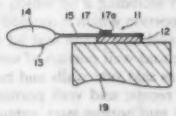
1. A protective cover for golf clubs in a golf bag having a shoulder strap supporting ring at the top of the bag, which comprises a flat flexible plastic sheet having weights attached thereto around the periphery thereof, and a tab attached to the sheet at an edge thereof and having a slit adapted to receive the shoulder strap supporting ring therethrough with a tongue to cover said slit to inhibit the ring from being withdrawn from the slit.

4,453,633

ELECTRONIC COMPONENT SERIES

Mitsuro Hamuro, Nagaokakyo, and Fumihiko Kaneko, Takefu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 15, 1982, Ser. No. 441,642
Claims priority, application Japan, Nov. 19, 1981, 56-186551
Int. Cl.³ B65D *73/04, 85/42*
U.S. Cl. 206—330 **4 Claims**



1. An electronic component series wherein a plurality of electronic components are securely and stabily secured to a carrier band such that the leads of said components are not unduly exposed in a manner which would permit them to be accidently moved out of their desired orientation, said component series, comprising:

an elongated, flexible carrier band having a top and a bottom edge;

a plurality of electronic components of the parallel lead type each having lead wires and an electronic element connected to said lead wires, said electronic component being arranged on and distributed longitudinally of said carrier band with said electronic component extending above said top edge of said carrier band and said lead wires overlapping a portion of said carrier band; and

an elongated adhesive tape having a transverse width which is less than the transverse width of said carrier band, said tape being bonded to said carrier band with said lead wires of said electronic components held therebetween in a

region closer to said top edge of said carrier band than said bottom edge of said carrier band;

each of said lead wires having an end portion which terminates at a location substantially immediately adjacent that end of said adhesive tape which is closest to said bottom edge of said carrier band whereby said lead wires do not extend to said bottom edge of said carrier band, each said lead wire having a substantially constant width throughout its length and each said lead wire having a burr formed at the end thereof, which burr engages said carrier band.

4,453,634

DISPENSER PACK

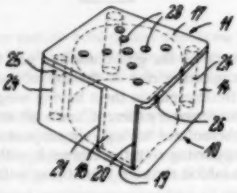
Klaus Blumenthal, Leubsdorf, Fed. Rep. of Germany, assignor to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Aug. 26, 1982, Ser. No. 411,679

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1981, 8125693[U]

Int. Cl.³ B65D *85/671*

U.S. Cl. 206—389 **8 Claims**



1. A dispenser pack for accommodating relatively soft and pliable strip or tape-like packaged material which is not very inherently stable, such as swabs, muslin or gauze bandage dressing materials or the like kept packaged in roll for without a core though removable from the dispenser pack where the soft material is always maintained readily removable without necessity to open the dispenser pack, said dispenser pack comprising

a bottom part which includes a base and axially parallel side walls integrally molded to one another and to said base, one of said side walls being provided with a recess; and

a lid part adapted to be removably placed on said bottom part, said lid part including a lid which is parallel to said base, and a wall portion which is molded onto said lid and projects toward said base when said lid part is placed on said bottom part; said wall portion of said lid part having the same length as said side walls and being slightly narrower than said recess; said wall portion, when said lid part is placed on said bottom part, extending asymmetrically into said recess in such a way as to leave free a permanently open removal slot for said packaged material, and in such a way as to form an additional fixing gap for always holding ready an end of said packaged material during sterilization, transport, and storage thereof.

4,453,635

OPTICAL FIBER COIL STORAGE ARRANGEMENT AND A METHOD OF MANUFACTURING THE SAME

Hans E. Heinzer, Roanoke, and Donald L. Taylor, Salem, both of Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

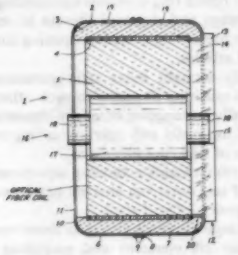
Filed Aug. 30, 1982, Ser. No. 412,736

Int. Cl.³ B65D *85/66, 85/67*

U.S. Cl. 206—408 **18 Claims**

1. An arrangement for storing a coil of optical fiber prior to and during inner peel deployment of the optical fiber from the coil, comprising

a rigid casing centered on an axis and at least circumferentially bounding a chamber for accommodating the coil, said casing having at least one axial end portion extending axially beyond the coil and circumferentially bounding an opening for the inner peel deployment of the optical fiber therethrough; and



means for holding said coil in a substantially coaxial position in said chamber with spacing from said casing, including a solid annular member filling said spacing and having an inner surface tightly engaging the outer circumference of the coil.

4,453,636

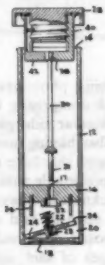
SAFE CONTAINER

Bernard A. Meadows, Rte. 4, Box 153; Larry A. Meadows, Rte. 4, Box 50, and Barbara A. Meadows, Rte. 4, Box 153, all of Elkton, Va. 22827

Filed May 3, 1983, Ser. No. 491,855

Int. Cl.³ B65D *83/04, 85/42*

U.S. Cl. 206—534 **16 Claims**



1. A storage assembly comprising:

a container including a peripheral wall, a bottom wall, and an intermediate wall positioned above said bottom wall to define an inaccessible view chamber bounded by a portion of said peripheral wall, said intermediate wall and said bottom wall at least one of which walls is transparent so as to make said view chamber visible;

a removable cap assembly mounted on the upper extent of said peripheral wall;

an elongated rod having one end connected to said removable cap and having an opposite end extending through said intermediate wall and terminating in said view chamber;

indicator means connected to said opposite end of said elongated rod; and

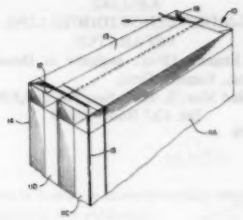
means for disconnecting said indicator means from said elongated rod in response to rotation of said rod so as to provide a subsequent indication of prior removal of the removable cap from the container.

4,453,637

DOUBLE COMPARTMENT VALVE BAG

Jeffrey A. Mazur, Pittsburgh, Pa., assignor to General Refractories Company, Bala Cynwyd, Pa.

Continuation of Ser. No. 233,460, Feb. 11, 1981, abandoned.
This application Jan. 10, 1983, Ser. No. 456,695
Int. Cl.³ B65D 27/08, 27/38
U.S. Cl. 206—602 6 Claims



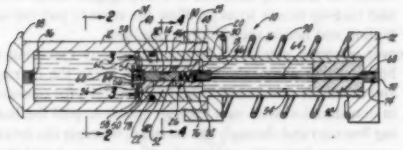
1. A closed bag comprising:
two adjacent, individual compartments having a common top section;
said two adjacent, individual compartments each having an outer side wall and an inner side wall said inner side walls interconnecting along at least one end;
a valve opening formed in said top section and connected to both of said compartments for filling said compartments simultaneously; and
means extending between said two adjacent, individual compartments for dividing said top section and disconnecting said compartments from each other.

4,453,638

HYDRAULIC SHOCK ABSORBER

Christopher D. Wallace, 8291 Honey La., Canton, Mich. 48187

Filed Sep. 27, 1982, Ser. No. 423,806
Int. Cl.³ F16F 9/10
U.S. Cl. 188—282 10 Claims



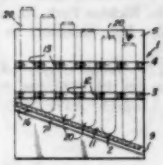
1. A hydraulic shock absorber comprising a hydraulic cylinder, a hollow piston movable axially into said cylinder in one direction when an impact force is applied axially to said piston, the interior of said hollow piston forming a fluid reservoir into which fluid is displaced from said cylinder in response to movement of said piston in said one direction, a flow metering device in said piston forming the sole means for permitting fluid flow from the cylinder into said reservoir when said piston moves in said one direction, said metering device comprising a bore in said piston, a first passageway in said piston communicating at one end with the cylinder and at the opposite end with said bore, a second passageway in said piston communicating at one end with said bore and at the opposite end with said reservoir, a valve spool slidably arranged in said bore and having one end thereof exposed to the pressure of the hydraulic fluid in said cylinder such that said spool is adapted to be displaced in a direction opposite to said one direction in response to increase in hydraulic pressure in said cylinder, spring means biasing said spool in said one direction normally to block the fluid flow through said passageways from said cylinder to said reservoir, displacement of said spool from said one position by hydraulic pressure in the cylinder establishing communication between said first and second passageways to an extent which varies directly with the pressure in the cylinder, and means accessible exteriorly of the piston and cylinder for adjusting the bias of said spring means on said spool.

4,453,639

RACK OR HOLDER FOR TEST TUBES

Yash Sharma, 2766 January Cts., Falls Church, Va. 22043

Continuation of Ser. No. 155,006, May 30, 1980, abandoned.
This application May 12, 1982, Ser. No. 377,441
Int. Cl.³ A47F 7/28
U.S. Cl. 211—74 9 Claims



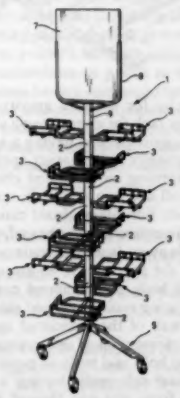
1. A test tube rack comprising (a) a support plate for supporting a plurality of test tubes at the rear portion of their bottoms which support plate is inclined at an upward angle of from about 10° to about 35° away from the horizontal in the direction from front to rear, and wherein said support plate has a reflecting upper surface; (b) holding means above said support plate for maintaining said test tubes in upright position at a predetermined spaced relationship to each other; (c) vertical means attached to said holding means for supporting said holding means and said support plate in a predetermined spaced relationship to each other; and (d) means for connecting said support plate to said vertical means.

4,453,640

ADJUSTABLE, SECTIONAL DISPLAY DEVICE

Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Aug. 17, 1982, Ser. No. 408,917
Claims priority, application Italy, Feb. 1, 1982, 52859/81[U]
Int. Cl.³ A47F 3/14
U.S. Cl. 211—133 4 Claims



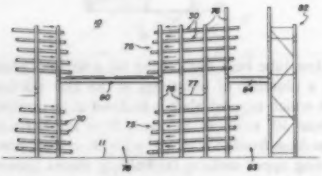
1. A display device comprising a pillar and plurality of shelves supported by the pillar at intervals along the length thereof, wherein the pillar is constituted by a plurality of tubu-

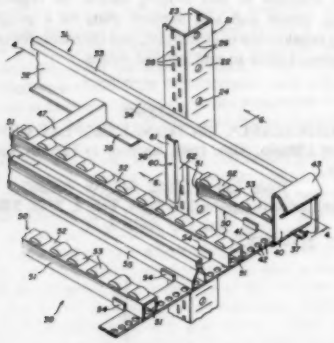
lar sections which are coupled together releasably, and the shelves are arranged in mutually aligned pairs on respective said sections of the pillar, the shelves of each pair being cantilevered on opposite sides of the respective section, wherein each pair of shelves includes a horizontal support rod which passes through the respective tubular section; two arrays of tubes which extend perpendicular to the support rod and define the respective base planes of the said shelves, and two side walls attached to each shelf, the side walls having arms freely slidable within the said tubes so that the walls of each shelf are movable relative to each other to vary the capacity of the shelf.

4,453,641
GRAVITY-FEED STORAGE AND DELIVERY SYSTEM

George E. Rasmussen, Richton Park, Ill., and Lucius B. Donkle, Jr., Michigan City, Ind., assignors to Interlake, Inc., Oak Brook, Ill.

Continuation of Ser. No. 136,396, Apr. 1, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,457
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—151 16 Claims





1. A mounting clip for use in a gravity-feed merchandise storage and delivery rack for connecting a shelf frame side rail to an upstanding support column having a vertical wall with a plurality of longitudinally spaced-apart apertures therein, said mounting clip comprising an elongated channel-shaped body including a main wall and two side walls respectively projecting from the opposite side edges of said main wall and extending substantially the entire length thereof, prongs projecting from said side walls away from said main wall and receivable in selected ones of the apertures in an associated support column to secure said body in a mounted configuration on the support column, bearing surfaces on said side walls engageable with the vertical wall of the associated support column for limiting the depth of insertion of said prongs and cooperating therewith rigidly to hold said body in position on the support column, each of said side walls having a retaining surface thereon extending from one end thereof toward the corresponding bearing surface and inclined outwardly from said bearing surface toward said main wall, and each of said side walls having a support surface thereon extending between said bearing surface and said retaining surface thereof, said retaining surfaces cooperating with the vertical wall of the associated support column when said body is disposed in the mounted configuration thereon for receiving therebetween in wedging engagement therewith the lower end of the associated shelf frame side rail for providing a tight fit of the shelf frame side rail between the support column and said clip.

4,453,642
CARRIAGE-MOUNTED SKIDDING LINE TAKE-UP APPARATUS

Curth Myhre, Eugene, Oreg., assignor to Danebo Parts and Equipment Inc., Eugene, Oreg.

Filed Mar. 5, 1981, Ser. No. 240,810
Int. Cl.³ B66C *21/00*
U.S. Cl. 212—78 1 Claim

1. In a logging system having a skyline, a carriage mounted for reversible travel along the skyline, a skidding line, and a hoisting line extending along the carriage with one end attached to an end of the skidding line and another end constructed for receiving a load, skidding-line-pick-up apparatus comprising

a tagline attached at one end to the skidding line adjacent the point where the skidding line attaches to the hoisting line,

tagline take-up means mounted on the carriage operatively connected to said tagline for taking up and paying out the same from its other end,

selectively actuatable, unidirectionally operable, power-operated drive means mounted on the carriage and disengageably drivingly connected to said take-up means, operable in an engaged mode to drive said take-up means in a manner causing the latter to take up said tagline, and hence the skidding line, and in a disengaged mode to free said take-up means so as to allow the same to pay out said tagline and hence the skidding line, and

power-operated pinch-roll means operatively receiving the hoisting line where the same extends along the carriage, and drivingly connected to said drive means for operation in coordination with said take-up means to pull the hoisting line into and through the carriage, wherein the driving connection between said pinch-roll means and said drive means is through said take-up means.

4,453,643
CRANES

William R. Thomasson, Houghton-le-Spring, England, assignor to Coles Cranes Limited, Sunderland, England

Continuation of Ser. No. 041,834, May 23, 1979, abandoned. This application Aug. 10, 1981, Ser. No. 291,865
Claims priority, application United Kingdom, May 31, 1978, 25104/78
Int. Cl.³ B66C *23/06, 23/36*
U.S. Cl. 212—184 2 Claims

1. A crane comprising a boom terminating in a boom top, a lattice extension connected with the boom top, a fly jib pivotally connected to the lattice extension adjacent the boom top, a double tie rope connecting an outer end of the jib to the lattice extension, the rope passing around first and second sheaves mounted at a top of the lattice extension, a pulley for engaging a portion of the double tie rope proximate the lattice extension, and a plurality of brackets attached at spaced apart

locations to the lattice extension and adapted to mount the last mentioned pulley, whereby the mounting of the pulley to

differing brackets causes a corresponding angular movement of the jib relative to the extension.

4,453,644

CAP WITH TEAR-OFF TAG

Jan Berglund, Västra Frölunda, Sweden, assignor to Wicanders AB, Sweden

PCT No. PCT/SE82/00157, 371 Date Dec. 13, 1982, 102(e) Date Dec. 13, 1982, PCT Pub. No. WO82/03837, PCT Pub. Date Nov. 11, 1982

PCT Filed May 7, 1982, Ser. No. 453,892

Claims priority, application Sweden, May 8, 1981, 8102899

Int. Cl.³ B65D *41/42*

U.S. Cl. 215—255 **2 Claims**

1. A tear tab closure for containers comprising a cap having a top wall, a downwardly depending skirt and score lines in the skirt and top wall defining a tear-off strip adapted to be torn out to open the closure, in which the improvement comprises a straight tear-off tag formed on said tear-off strip and extending downwardly from the skirt, and a separate pull ring secured at the bottom end of said tear-off tag, said tear-off tag having formed therein an outwardly projecting impression extending downwardly from about the level of the bottom of said skirt to said pull ring and formed at its lower end with a portion projecting outwardly from said pull ring, said portion being arranged to be moved into contacting relation to the outer surface of said impression when said ring is raised to fold it over said tear-off tag to establish a lever arm, to one end of which force is applied when said pull ring is raised to remove the tear strip, whereby tearing of said tear strip from the cap is facilitated.

4,453,645

ADJUSTABLE MULTI-COMPARTMENTED CONTAINERS

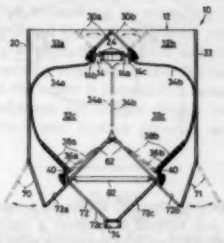
Toshihiro Usui, and Kiyoshi Inomoto, both of Utsunomiya, Japan, assignors to Fuji Heavy Industries, Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,125

Claims priority, application Japan, Nov. 25, 1980, 55-165496

Int. Cl.³ B65D *25/06, 88/32*

U.S. Cl. 220—22 **3 Claims**



1. A container comprising:

(a) a container body;

(b) a pair of partitions disposed movably in the container body so as to define a central compartment between them and side compartments between each partition and a side of the container;

(c) inlets for each of the compartments formed at the upper portion of the container body, the upper end of each partition being fixed at the upper portion of the container body on opposite sides, respectively, of the inlet for the central compartment;

(d) a central outlet from the central compartment at the bottom of the container body and side outlets from the side compartments at the lower portion of the sides of the container body;

(e) rotatable plates attached, respectively, to the lower end portion of each partition in a fluid-tight manner and each plate being fixed to an associated shaft extending horizontally along the rotatable plate;

(f) means for rotating the shafts to turn the rotatable plates in order to assist the movement of each partition for widening said compartments;

(g) supporting means arranged in the central compartment near the bottom thereof and extending inwardly and upwardly from each side of the central compartment outlet, with said shafts and plates extending along opposite sides of said supporting means so as to rest said rotatable plates thereon and to provide inclined surfaces to easily slide downward commodities or goods to be discharged; said supporting means having openings therein to permit flow of material from said central compartment through to said central outlet and the bottom of the container on each side of said supporting means tapering downwardly and laterally outwardly toward said side outlets.

4,453,646

CLOSURE HAVING FRANGIBLE MEANS

Niels Aage L. Harrild, Söborg, Denmark, assignor to Nigu-Pack A/S, Söborg, Denmark

PCT No. PCT/DK81/00117, 371 Date Aug. 23, 1982, 102(e) Date Aug. 23, 1982, PCT Pub. No. WO82/02183, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 21, 1981, Ser. No. 413,348

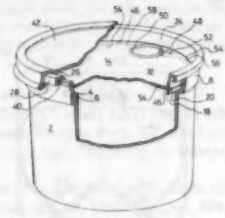
Claims priority, application Denmark, Dec. 23, 1980, 5491/80

Int. Cl.³ B65D *51/22*

U.S. Cl. 220—258 **12 Claims**

1. A jug shaped container of a thermoplastic material, the container comprising a sealing lid means for sealing the jug shaped container, a snap action locking means provided be-

tween respective edge portions of the container and the sealing lid means, said snap action locking means being adapted to be actuated by a short locking displacement of the sealing lid means upon application of a high pressing force and being adapted to be substantially impossible to manually release, said sealing lid means being adapted to be opened interiorly of the jug edge portions whereby an outer edge portion of the lid



means, upon opening thereof, forms an apparently integrally portion of the jug shaped container, a reclosing lid means including a snap lock means cooperating with at least one of an outer portion of the edge of the jug or an outer portion of the sealing lid means, whereby the sealing lid means and the reclosing lid means are mountable on the jug shaped container as a preassembled unit.

4,453,647

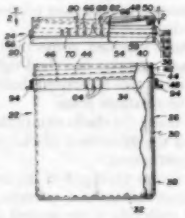
PLASTIC CONTAINER HAVING THREADED CLOSURE

Benjamin C. Neat, 11201 Easum Rd., Jefferson Town, Ky. 40299

Filed Jan. 26, 1983, Ser. No. 461,243

Int. Cl.³ B65D *41/04*

U.S. Cl. 220—288 **28 Claims**



1. A container comprising: a receptacle and a cover each of which includes a unitary member molded from plastic; said receptacle member including a round side wall and a bottom wall; said side wall including an upper end having a round upper edge that defines an open end of the receptacle; the side wall also including a lower end that is closed by the bottom wall to define a closed end of the receptacle; the upper end of the side wall having round inner and outer surfaces one of which includes a helical thread; said cover member including an upper wall and an annular lip that extends downwardly from the upper wall and has a round lower edge; said cover lip having round inner and outer surfaces one of which includes a helical thread for mating with the helical thread of the receptacle to secure the cover on the receptacle; said helical threads being movable into mating engagement with each other by threading upon relative rotation between the cover and the receptacle or by flexing of the receptacle side wall and the cover lip upon downward movement of the cover over the receptacle; a retainer located on one of the members in a spaced and opposed relationship to the round surface thereof on which the helical thread thereof is mounted; and said retainer opening vertically to receive the round edge of the other member upon securement of the cover to prevent lateral movement between the upper end of the receptacle side wall and the cover lip in order to maintain engagement of the helical threads.

4,453,648

DISPOSAL BIN

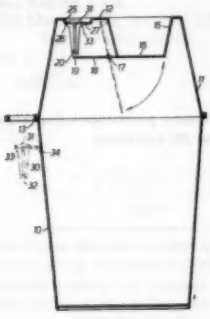
John Harris, Newport, and John E. Anthony, Llanyrafon, both of Wales, assignors to Frontier Plastics (South Wales) Limited, Crosskeys, England

Filed Nov. 19, 1981, Ser. No. 323,264

Claims priority, application United Kingdom, Nov. 19, 1980, 8037154

Int. Cl.³ B65D *43/14, 45/00, 51/04*

U.S. Cl. 220—324 **4 Claims**



1. A hygienic container for refuse, comprising a body including an inwardly directed chute defining an entrance opening adjacent the top, a movable door pivotally mounted on a pivot located within said body, and biased upwards to a closed position closing the entrance at the inner end of said chute, said door having a projection extending beyond said pivot, and locking means operable from outside said container, said locking means comprising a plug having an enlarged head and a body, the container having an aperture through which the body but not the head of the plug is insertable, the container and the plug having coacting structure whereby when the plug is inserted in the aperture, the plug becomes locked in the aperture and the head of the probe closes the aperture and the body of the plug engages the said projection of said door for irreversibly holding the door closed.

4,453,649

CONSTRUCTION FOR CONTAINING PLASTIC FILM

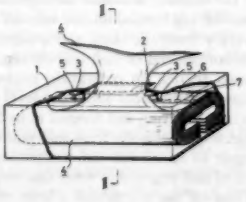
Shingo Origuchi, Tokyo, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,815

Claims priority, application Japan, Nov. 28, 1980, 55-168412; Feb. 27, 1981, 56-28093

Int. Cl.³ B65H *3/58*

U.S. Cl. 221—26 **23 Claims**



1. A construction for containing a plastic film, comprising: a continuous elongated strip of plastic film which is trans-

versely partitioned along its length into a multiplicity of sections, said strip being provided with a multiplicity of longitudinally spaced-apart perforated lines extending in the crosswise direction of said strip and dividing said strip into said multiplicity of sections which are separable from each other, transversely extending linear cuts being formed in said strip at predetermined regular intervals along the longitudinal direction of said strip, said linear cuts being colinear with and forming part of said perforated lines, there being at least one of said cuts in each of said sections, said strip being folded back and forth upon itself in such a manner that said linear cuts are superposed on one another to form at least one set of cuts which are in registry with each other;

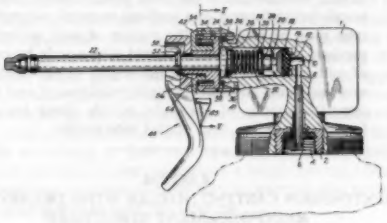
a container having a take-out opening, said strip being contained in said container and said sections being withdrawable from said container through said take-out opening; and

at least one insert member provided in said container and inserted through said set of superposed linear cuts and adapted for causing one of said sections to be separated from said strip when said one section is withdrawn from said container.

4,453,650
CONTROL VALVE FOR AN AEROSOL CAN

Paul A. Witte, New Hope, Pa., and Michael J. Pappas, Caldwell, N.J., assignors to Falcon Safety Products, Inc., Mountainside, N.J.

Filed Nov. 12, 1981, Ser. No. 320,750
Int. Cl.³ B67D 5/22
U.S. Cl. 222—43 **9 Claims**



1. A detachable control valve for an aerosol can comprising

(a) a housing;

(b) a collar on said housing for being attached to a valve assembly on said aerosol can, and actuating said can valve when attached;

(c) a hollow barrel axially slideably mounted on said housing with one end inside and the other end outside said housing and having a normal position furthest into said housing and an activated position axially outward therefrom, said barrel having a first engaging member thereon just outside of said housing;

(d) a chamber in said housing communicating with said collar for receiving gas from said aerosol can when attached, and containing said one end of said barrel;

(e) an elongated trigger having an opening at one end and extending substantially perpendicular to said barrel, said trigger being positioned on said barrel between said barrel first engaging member and said housing with the barrel passing through said opening, said opening being slightly larger than the outside of the barrel to permit pivoting of said handle against said adjacent housing;

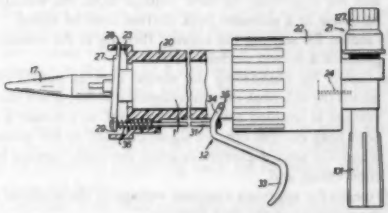
(f) a movable seal in said chamber normally closing one end of said communication with said collar;

(g) a spring in said chamber urging said seal and barrel into their normal position, whereby when said trigger is activated by an operator moving its other end, the trigger pivots against said adjacent housing with its one end engaging said barrel member, axially moving said barrel from its normal position against the force of the spring and thus opening the seal and establishing a path for gas from the aerosol can to flow to the chamber and then through the hollow in the barrel and out through the other end thereof; and wherein said housing includes adjacent said trigger a rotatable collar coaxial with said barrel and with an edge adjacent to said trigger, providing a pivot fulcrum for said trigger when the collar is rotated to a first position with the edge adjacent said trigger; a slot in said collar extending from said fulcrum edge into said housing; said trigger further comprising an extending finger between said other end and close to said pivot point, said finger enters said slot when the trigger is activated; said collar further comprising adjacent to said slot an outer surface, which when the collar is rotated to a second position the surface is adjacent the trigger finger, whereby in said second position said surface prevents actuation of the trigger.

4,453,651
CARTRIDGE ASSEMBLY

John D. Braithwaite; Derrick O. King, both of Berkshire, and Sidney J. Williams, Surrey, all of England, assignors to Black & Decker Inc., Newark, Del. and Berger, Jenson and Nicholson Limited, London, England

PCT No. PCT/GB81/00078, 371 Date Dec. 30, 1981, 102(e) Date Dec. 30, 1981, PCT Pub. No. WO81/03132, PCT Pub. Date Nov. 12, 1981
PCT Filed Apr. 30, 1981, Ser. No. 369,021
Claims priority, application United Kingdom, Apr. 30, 1980, 8014270
Int. Cl.³ B65B 7/28
U.S. Cl. 222—82 **15 Claims**



1. A dispenser for dispensing a fluent substance, comprising:

a housing;

a cartridge containing the fluent substance and being removably housed in said housing;

an outlet disposed at one end of said cartridge, said outlet having an interior side in communication with the interior of said cartridge and an exterior side directed away from said cartridge;

means, acting from the other end of said cartridge, for dispensing said fluent substance through said outlet;

a valve member mounted inside said cartridge for closing said outlet;

means for urging said valve member towards said outlet to close the latter;

a detachable nozzle having an inlet end and a dispensing end, said inlet end being insertable through and withdrawable from said outlet from said exterior side thereof, said valve member closing said outlet when said nozzle is withdrawn therefrom and detached from said dispenser;

means for moving said nozzle in use inwardly and outwardly in said outlet, whereby said nozzle is moved inwardly into said cartridge to displace said valve member and open said outlet to dispense said fluent substance, and said nozzle is moved outwardly to effect closing of said outlet by said valve member; and

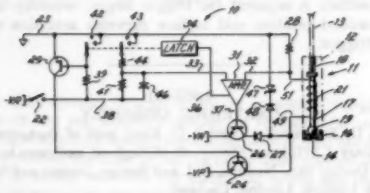
said moving means comprising actuating means mounted on said housing and engaged with interlocking means on said nozzle externally of said cartridge by relative movement of said actuating means and said interlocking means.

4,453,652

CONTROLLED CURRENT SOLENOID DRIVER CIRCUIT

Stephen L. Merkel, Bay Village, and Richard P. Price, Parma Heights, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Sep. 16, 1981, Ser. No. 301,731
Int. Cl.³ B67D *3/00*; H01H *9/00*
U.S. Cl. 222—504 **15 Claims**



7. In a solenoid-operated heated-fluid dispensing arrangement having a valve which is operable to dispense a heated fluid and a solenoid energizable to operate the valve, an improved driver circuit to energize the solenoid in response to externally applied turn-on and turn-off control signals, comprising:

(a) means for coupling a first voltage across the solenoid in response to an externally applied turn-on control signal and for removing the first voltage from the solenoid in response to a solenoid peak current control signal;

(b) means for sensing the current flowing in the solenoid to produce a sensed current output;

(c) means for comparing the sensed current output of the means (b) to a peak current reference value, when the first voltage is coupled across the solenoid, to produce a solenoid peak current control signal coupled to the means (a) when the sensed current reaches the peak current reference value; and

(d) means for applying a second voltage to the solenoid after the removal of the first voltage;

the means (c) including a comparator circuit having a first input coupled to the peak current reference value and having a second input coupled to the sensed current output of the means (b), the comparator circuit being operable to compare the signals at the two inputs to produce a solenoid peak current control signal at an output when the input signals are equal; and

latch means coupled between the output of the comparator circuit and the means (a) for coupling the solenoid peak current control signal to the means (a) until the latch means is reset after an externally applied turn-off control signal.

4,453,653

COLLAPSIBLE WALL CLOSURE FOR DISPENSERS

Orest Chapelsky, Ann Arbor, and Norman A. Zausmer, Oak Park, both of Mich., assignors to Michlin Diazo Products Corp., Detroit, Mich.

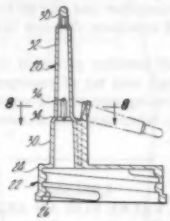
Continuation of Ser. No. 891,096, Mar. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 688,037, May 19, 1976, Pat. No. 4,080,989. This application Oct. 31, 1980, Ser. No. 202,852
Int. Cl.³ B65D *47/22*
U.S. Cl. 222—528 **2 Claims**

1. A closure comprising:

a cap adapted to be secured to a fluid container to be sealed thereby, said cap including a cap body;

a tube nozzle extending from said cap body, the interior of said tube nozzle extending through said cap body to thereby be placed in communication with said container to be sealed by said cap, said nozzle being of stepped shape comprising a large diameter section adjacent said cap body, further including a small diameter section remote from said cap body and also including a transition section joining said large diameter section to said small diameter section;

a pair of undercuts formed in the interior of said tube nozzle and intermediate its length thereof, said undercuts located



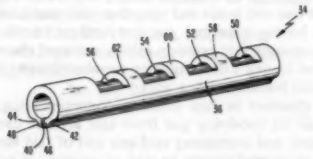
diametrically opposite each other in said small diameter tube section adjacent said transition section said undercuts comprising vee-shaped grooves extending along a segment of said interior of said tube nozzle, the bottom of said vee-shaped grooves axially extending parallel to the axis of said tube nozzle and providing a reduced wall thickness of said tube nozzle at opposite points thereof, said tube nozzle being formed of a resilient material, whereby said tube may be folded in the region of said undercuts to produce complete sealing of said tube nozzle by collapse of said tube nozzle wall in the region of said undercuts, said undercuts affording complete collapse of said tube at opposite regions of said tube nozzle along bend lines formed by folding over of said tube nozzle.

4,453,654

CONTINUOUS CASTING NOZZLE WITH TRANSVERSE REINFORCEMENT STRUCTURE

John R. Bedell, Madison, N.J., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 16, 1982, Ser. No. 389,071
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—594 **11 Claims**



1. A nozzle for dispensing molten metal to form a cast strip comprising:

a hollow tubular member;

a slot in said tubular member for discharging molten metal therethrough, said slot extending through said tubular member in a predetermined direction; and

a series of openings forming at least a portion of said tubular member for receiving molten metal to be discharged, said openings being aligned in said predetermined direction and separated by ribs extending in a direction transverse to said predetermined direction, said openings being in

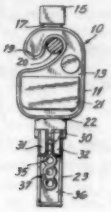
fluid communication with said slot through said tubular member.

4,453,655

DISPLAY HANGER FOR BELTS

George Smilow, Yonkers, and Samuel L. Kayen, Elmont, both of N.Y., assignors to B & G Plastics, Inc., New York, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,865
Int. Cl.³ A47J 51/097
U.S. Cl. 223—87 2 Claims



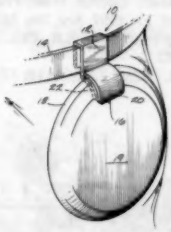
1. a display hanger for belts having varying types of belt buckles at one end thereof comprising: a unitary piece of synthetic resinous material including a main body having hook means for engaging a supporting rod, and a depending buckle-engaging element connected to said main body; said buckle-engaging element including an elongated portion adjacent said main body portion having at least one opening therein extending through the plane thereof and a laterally extending recess forming member having an upper surface and supported by said elongated portion and including a base defining an axially oriented expandable slot therein, said slot being adapted to engage the pivotally mounted centrally disposed prong of a belt buckle while said buckle is supported from said upper surface of said recess forming member; and a pair of downwardly extending tabs secured at the upper ends thereof to said recess forming member on either side of said slot, and at least partially over-lying at least one opening in said elongated portion to define a channel into which a buckle having a laterally extending projection thereon may be inserted, said projection engaging said at least one opening.

4,453,656

FLYING DISC CARRYING CLIP

Joseph A. Gillum, 2341 N. 20th St., Milwaukee, Wis. 53208

Filed Dec. 14, 1981, Ser. No. 330,185
Int. Cl.³ A44B 21/00
U.S. Cl. 224—247 6 Claims



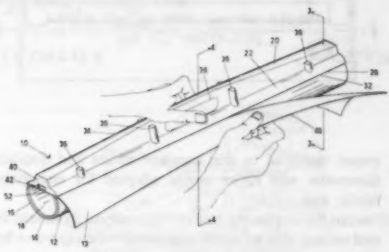
1. An apparatus for holding a flying disc having a curved outer edge portion, said apparatus comprising a clip including means for securing the clip to a wearer's garment, and spaced-apart curved arms connected to said securing means and extending generally downward therefrom, said arms generally conforming to the curved outer edge portion of the flying disc so that the outer edge of the flying disc can be inserted and removably held between said arms so that the flying disc hangs downward in a generally vertical plane adjacent to the wearer's garment.

4,453,657

DISPENSING PACKAGE FOR ROLLED SHEET MATERIAL

Joseph R. Kuehn, Rte. 1, Black Earth, Wis. 53515

Filed Sep. 16, 1982, Ser. No. 418,993
Int. Cl.³ B65D 85/672
U.S. Cl. 225—65 6 Claims



1. A dispensing package adapted to be mounted on a tubular roll of sheet material to be dispensed therefrom, the roll having ends and interior surfaces defining a hollow core, the dispensing package comprising:

(a) a unitary, molded plastic body selected to be substantially as long as the roll and having under and upper surfaces, the under surface including a contact surface adapted to slidingly engage a portion of the circumference of the roll, the contact surface extending to a cutting edge generally parallel to the axis of a roll engaged by the contact surface, and the contact surface being arcuate and having a radius of curvature greater than that of the roll so that the roll may rotate against smooth parts of the under surface as the roll turns, without contacting the cutting edge;

(b) an upwardly projecting back rib extending lengthwise along the body;

(c) opposed body ends extending generally radially inward from the contact surface and adapted to extend over the ends of a roll engaged by the contact surface, each body end having an inner surface that terminates in an end edge and inclines outwardly as it extends from the back rib toward the end edge, so that parts of the roll contacting the body end do so against the inner surface and not the end edge; and

(d) a roll retainer extending from each body end toward the opposed body end and adapted to extend into the hollow core of a roll to retain the roll within the body.

4,453,658

EQUIPMENT FOR THE THREAD-ADJUSTED SEVERING OF A SEGMENT FROM A LENGTH OF FABRIC

Werner Augustin, Uerdinger Strasse 2-8, D-4150 Krefeld, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,175
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 8127224[U]
Int. Cl.³ B26F 3/02
U.S. Cl. 225—95 10 Claims

1. Equipment for severing a segment from a length of fabric in a thread-adjusted manner, comprising:

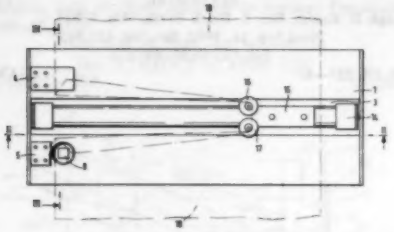
(a) a bench having first and second spaced sides;

(b) first and second clamp means mounted to said first side

and adapted for releasably clamping a first edge of said fabric;

(c) carriage means displaceably mounted to said bench between said first and second clamp means and adapted for being displaced from said first side to said second side;

(d) first and second adjacently disposed rotatable roller



means mounted to said carriage means and displaceable therewith, said roller means adapted for engaging said fabric; and,

(e) means for displacing said carriage means from said first to said second side whereby said fabric when grasped by said clamp means is torn between said roller means as said carriage is displaced from said first to said second side.

4,453,659

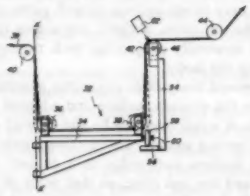
WEB GUIDING APPARATUS

William A. Torpey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,507

Int. Cl.³ B65H *25/10, 25/26, 23/02*

U.S. Cl. 226—20 **9 Claims**



1. Web guiding apparatus for correcting the deviation of a moving web from a true path of the web in which an edge of the web is parallel to and a predetermined distance from a reference line, said apparatus comprising:

an entry guide roller over which the web is trained;

means for supporting said entry guide roller for pivotal movement about a pivot axis transverse to the axis of said entry guide roller;

an axially movable exit guide roller over which the web is trained, said exit guide roller having a fixed unmovable axis substantially parallel to the axis of said entry guide roller when the web is traveling along its true path;

means coupling said entry and exit guide rollers wherein axial movement of said exit roller along said fixed axis imparts pivotal movement to said entry roller;

means for axially moving said exit guide roller; and

means for sensing an edge of the web adjacent said exit guide roller and actuating said exit guide roller moving means to position said exit and entry guide rollers so that the web is guided along said true path.

4,453,660

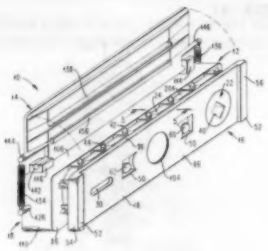
FORMS FEED TRACTOR

Robert W. Cornell, Boca Raton, and Donald K. Rex, Highland Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,891

Int. Cl.³ B65H *17/38*

U.S. Cl. 226—74 **14 Claims**



1. A tractor mechanism for moving a record medium having edge perforations therein comprising:

frame means having a supporting surface which supports said record medium and a channel through said supporting surface;

a thin strip having irregularities along at least one side thereof; and

a plurality of drive members affixed to said strip, each drive member having an upper pin portion size to engage the holes in said medium and a lower drive element portion sized to freely move along said channel with a minimum movement across said channel, said drive element portion having an upper flat surface and being sized so that said upper flat surface is substantially in the same plane as said supporting surface when the bottom of said drive element portion rests on the bottom of said channel, said pin portion extending upward from said upper flat surface, said drive members being affixed to said strip at an irregularity within said drive element portion at a position below said upper flat surface and at intervals separated so that said pin portions engage said record medium perforations.

4,453,661

SURGICAL INSTRUMENT FOR APPLYING STAPLES

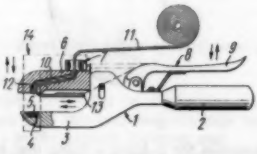
Stepan N. Genyk; Vasily M. Krysa; Mikhail V. Zraiko; Ljubomir G. Vovk, all of Ivano-Frankovsk, and Ivan I. Pyatiletov, Kiev, all of U.S.S.R., assignors to Ivano-Frankovsky Gosudarstvenny Meditsinsky Institut, Ivano-Frankovsk, U.S.S.R.

Filed Oct. 19, 1981, Ser. No. 312,748

Claims priority, application U.S.S.R., Oct. 23, 1980, 2995041; Oct. 23, 1980, 2995042

Int. Cl.³ B25C *5/04;* **A61B** *17/04*

U.S. Cl. 227—19 **15 Claims**



1. A surgical instrument for applying staples, comprising:

an elongated body having a distal end and a hand lever disposed at the end opposite to said distal end of said body;

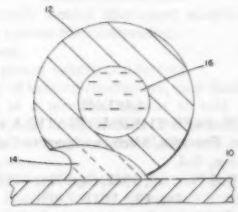
a female die secured at said distal end of said body and provided with a pit for bending the legs of said staples;
a clamping jaw mounted on said body for reciprocating travel in the direction of said female die, and provided with a driver for inserting staples;
a passage for feeding a wire, said passage being provided in said clamping jaw and having an outlet end;
a knife for cutting wire lengths, said knife being mounted on said clamping jaw for reciprocating travel in the direction perpendicular to the outlet end of said passage;
said clamping jaw provided with a first guide for guiding said knife and a second guide for guiding a spring-loaded slide bar having a knurled member extending into said passage for feeding the wire, said slide bar movable toward and away from said outlet end along said second guide in said clamping jaw; and
a device for forming staples, mounted on said body.

4,453,662

SOLDER HANDLING

Robert J. Russell, II, North Dighton, Mass., assignor to Technical Materials, Inc., Lincoln, R.I.

Filed Feb. 10, 1982, Ser. No. 347,532
Int. Cl.³ B23K *35/14*
U.S. Cl. 228—56 **6 Claims**



1. A solder-base metal product comprising
a base metal, and
solder wire continuously attached to said base metal along its length at the solder-base metal juncture by a small portion of melted solder.

4,453,663

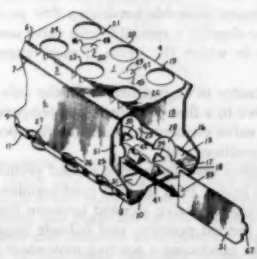
Patent Not Issued For This Number

4,453,664

DUAL PURPOSE PROMOTIONAL MEANS

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 5, 1982, Ser. No. 439,384
Int. Cl.³ G09F *3/10*
U.S. Cl. 229—40 **10 Claims**



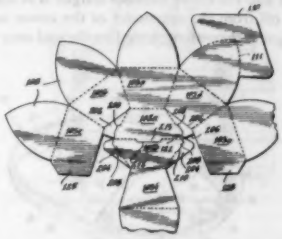
1. In an article carrier comprising top, bottom and side walls interconnected to form a sleeve, promotional means comprising a primary coupon, a secondary coupon foldably joined to an end edge of said primary coupon, a pair of glue flaps joined respectively to the side edges of said secondary coupon along a pair of tear lines and being adhered to one of said walls, said primary coupon being disposed intermediate said secondary coupon and said one wall, and a pull tab being integrally joined to said primary coupon along said end edge thereof.

4,453,665

CONTAINER FOR EXPANDABLE FOOD POUCH

Harry I. Roccaforte, Western Springs, and Raymond G. Scott, Oak Brook, all of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 23, 1982, Ser. No. 421,985
Int. Cl.³ B65D *5/36*
U.S. Cl. 229—41 B **23 Claims**



12. A quick-opening, non-metallic container for housing an expandable food pouch in a non-expanded and in an expanded condition comprising:
a base portion having
a bottom support panel of regular polygonal shape bisected by a scoreline and adapted to be folded about said scoreline,
upwardly and outwardly extending side wall panels connected to preselected ones of the edges of said polygonally shaped bottom support panel, each one of said side wall panels being connected to the adjacent one thereof to form with said bottom support panel a bowl when said bottom support panel is unfolded about said scoreline, said bowl being adapted to receive an expandable food pouch in a stored condition,
a plurality of overlapped, separate top panels, each top panel having an edge resiliently and foldably connected to one of said side panels, and
means connected to said bottom support panel extending between said bottom support panel and said side wall panels for locking said bottom support panel in a substantially horizontal plane relative to said sidewalls, said locking means including
a U-shaped locking tab cut along said base scoreline intermediate the ends thereof.

4,453,666

TAMPER-EVIDENT TOP CLOSURE

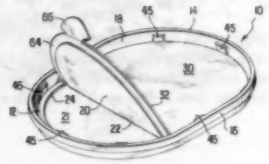
Robert L. Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,129
Int. Cl.³ B65D *5/68, 43/14*
U.S. Cl. 229—43 **6 Claims**

1. In a top closure lid construction for a container, the lid being formed of:
(a) a cover member formed of a relatively low brittle plastics materials, the cover member having means along its periphery for sealing attachment to the upper open end portion of a container, the cover member having a tongue formed integrally therefrom, the tongue partially defined by a weakened hinge-forming line to serve as a hinge for the tongue, the remainder of the tongue defined by a

curved cut line extending through the thickness of the cover member, the ends of the cut line terminating, respectively, at the ends of the weakened hinge-forming line, whereby when the tongue is pivoted upwardly about its hinge forming line, a dispensing opening is defined in the cover member; and

(b) a main paperboard insert superposed on and bonded to the top surface of the cover member and having an end area overlying said tongue, the main paperboard insert having a fold line forming a deformation line overlying and substantially aligned with the weakened hinge-forming line of the cover member, the said end area of the main paperboard insert having a pull tab connected thereto, whereby when the pull tab is pulled upwardly, both the cover member tongue and the overlying end area of the main paperboard insert pivot about their respective hinges and fold lines to thereby define an opening in the cover member and the cover member tongue is at least partially broken off from the remainder of the cover member and the tongue is thereafter carried by the end area of the main



paperboard insert to thereby preclude blocking of the dispensing opening during dispensing by the inherent resiliency of the plastics cover member material from which the tongue is formed, the improvement comprising means to render said top closure lid construction tamper-evident, said means comprising a secondary paperboard insert, said secondary insert carrying a pull tab and positioned between the main paperboard insert and the brittle plastics cover member and extending from an edge of the main paperboard insert to said fold line defining the deformation line, the secondary insert being initially connected by a perforated line to the end area of said main paperboard insert and initially bonded to at least the tongue portion of the cover member, whereby when the pull tab is pulled to thereby pivot the tongue and define an opening in the cover member, the pull tab will separate from said end area of said main paperboard insert along said perforated line, but will remain connected to the edge of said secondary paperboard insert, whereby the first use of the pull tab to pivot the tongue will be evident.

4,453,667

BILL TRANSPORT SYSTEM FOR A FAREBOX

Arthur S. Zerfahs, Elk Grove, Ill., assignor to Qonaar Corporation, Rolling Meadows, Ill.

Filed Jan. 18, 1982, Ser. No. 340,101
Int. Cl.³ G07B *15/00*
U.S. Cl. 232—7 **14 Claims**

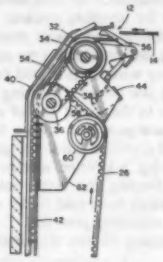
1. In a revenue collecting farebox having a slot for receiving bills, the improvement in a transport means for separating a first and second bill inserted into said slot in overlapping relationship comprising:

(a) a first conveying means for advancing said bills;

(b) a second conveying means for receiving said bills from said first conveying means, said first and second conveying means disposed to simultaneously engage a bill;

(c) means for driving said first conveying means at a speed simultaneously less than the speed of said second conveying means,

whereby said second conveying means will cause said first bill to move at a speed greater than said second bill while said second bill is engaged by said first conveying means



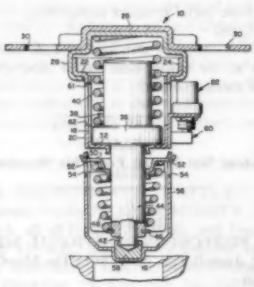
thereby separating said first bill from overlapping relationship with said second bill.

4,453,668

FAIL-SAFE THERMOSTATIC VALVE

Martin L. Abel, Franklin, Mich., assignor to Caltherm Corporation, Columbus, Ind.

Filed Nov. 10, 1982, Ser. No. 440,530
Int. Cl.³ F01P *7/02*
U.S. Cl. 236—34.5 **8 Claims**



1. A temperature-responsive valve for moving between an open position and a closed position comprising:

a valve element movable between a first position in which the valve element is spaced from a valve seat and a second position in which the valve element engages the valve seat;

a main actuator in engagement with the valve element and responsive to a first predetermined temperature for moving the valve element between the first position and the second position; and

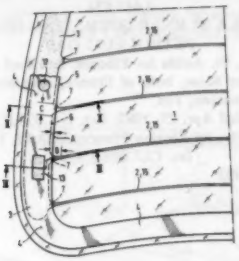
fail-safe means responsive to a second predetermined temperature higher than the first predetermined temperature for moving the valve element between the first position and the second position, said fail-safe means comprising means for producing a positive movement in response to said second predetermined temperature and including a wax-filled element actuator responsive to said second predetermined temperature.

4,453,669

ELECTRICALLY HEATED GLASS PANE

Heinz Karla, Herzogenrath, and Mario Roth, Aachen, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, France

Filed Jul. 9, 1982, Ser. No. 396,766
Claims priority, application France, Jul. 15, 1981, 81 13806
Int. Cl.³ B60H 1/02; H05B 3/06
U.S. Cl. 237—12.3 R 12 Claims



1. An electrically heated glass pane adapted for use as a window for an automobile comprising:

(a) a glass pane,

(b) a pair of power supply conductors,

(c) a plurality of heating conductors, each heating conductor connected at a terminal section to said power supply conductors, and each of said conductors formed of an electrically conductive material disposed on a surface of said glass pane,

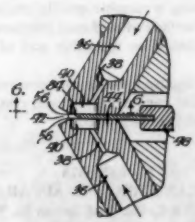
(d) a strip both covering said power supply conductors and extending laterally of the same providing a protective layer, said strip formed of an electrically insulating material, and wherein each terminal section of said heating conductors below said strip is widened throughout a transition region toward said power supply conductor so that the electric resistance of said terminal section is less than the electric resistance of increments of each heating conductor between said terminal sections.

4,453,670

PLURAL COMPONENT FLUSHLESS SPRAY GUN

Robert L. Sirovy, Glen Ellyn, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Sep. 13, 1982, Ser. No. 417,095
Int. Cl.³ B05B 7/04
U.S. Cl. 239—117 22 Claims



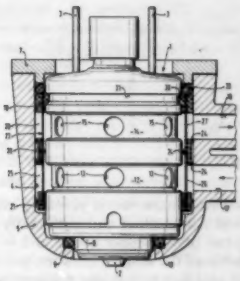
1. An airless plural component spray gun, comprising a gun body; a fluid outlet at a forward end of said body; a pair of opposed channels in said body extending rearwardly from said outlet; a relatively thin blade interposed between and substantially sealed with said channels whereat it overlies the same, a forward edge of said blade extending across said channels rearwardly of said outlet; and means for introducing first and second fluidic components under pressure into respective ones of said channels rearwardly of said forward blade edge for flow through said channels into a very small volume mixing chamber defined between said forward blade edge and said outlet and thence through said outlet, said components being intimately contacted and mixed together in said chamber.

4,453,671

FUEL INJECTION SYSTEM

Udo Hafner, Lorch, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,103
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102853
Int. Cl.³ B05B 9/00
U.S. Cl. 239—124 7 Claims



1. A fuel injection system for internal combustion engines having an air intake tube and at least one fuel injection valve, said at least one fuel injection valve having a linear axis with an outer wall surface extending about said axis and surrounded by a separate holder body, said holder body further including an annular wall spaced from said at least one fuel injection valve, a fuel supply inlet line connected to said holder body through which fuel is injectable into said holder body, a fuel discharge line connected to said holder body through which fuel is discharged from said holder body, and an axially aligned mouthpiece through which fuel is ejected into an air intake tube, characterized in that said at least one fuel injection valve has at least one fuel inlet opening in said outer wall surface in registry with said fuel supply inlet line and at least one fuel outflow opening in said outer wall surface of said at least one fuel injection valve in registry with said fuel discharge line provided in said holder body, a single filter element surrounding said at least one fuel injection valve interposed between said at least one fuel injection valve and said annular wall of said holder body and extending across said fuel supply inlet line and said fuel discharge line, said at least one fuel injection valve further including a plurality of axially aligned spaced rims arranged serially along said outer wall surface of said fuel injection valve and plural sealing means on said filter means arranged to engage said wall of said holder body to separate said fuel supply inlet line from said fuel discharge line, and to engage said spaced rims on said fuel injection valve to separate said fuel inlet opening from said fuel outflow opening.

4,453,672

VEHICLE MOUNTED AERIAL LIFT

Edward V. Garnett, 9152 Kahului Dr., Huntington Beach, Calif. 92646

Filed Mar. 23, 1982, Ser. No. 361,097
Int. Cl.³ A62C 27/00; B66F 9/20
U.S. Cl. 239—166 18 Claims

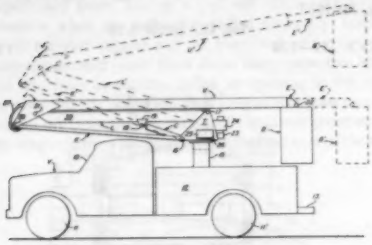
1. An aerial lift for a vehicle, comprising:

a support pivotally mounted on said vehicle for movement about an upright axis;

a lower boom whose inner end is pivotally connected to said support and extending generally horizontally in a storage position;

means for moving said lower boom upwardly and downwardly about the pivotal connection thereof and disposed at an acute angle to said lower boom in said storage position, said moving means being pivotally connected to said support and to said lower boom;

an upper boom whose inner end is pivotally associated with the outer end of said lower boom and which extends in a generally horizontal storage position above said lower boom;



link means whose inner end is pivotally connected to said support and whose outer end is pivotally associated with the inner end of said upper boom; and

the relationship of the lengths between pivots of said lower boom and said link means, the distance between the pivotal connections of said lower boom and said link means to said support and the distances between the points of pivotal association between said lower boom and said link means with said upper boom being such that the outer end of said upper boom will be raised generally vertically as said lower boom is raised.

4,453,673

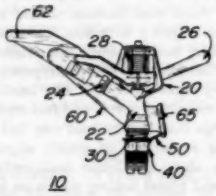
RANGE-CONTROLLED ROTARY SPRINKLER

Howard Icenbice, Norland, Id., assignor to Lawrence H. Duffin, Jr. and Alan C. Duffin, both of Burley, Id.

Filed Feb. 11, 1982, Ser. No. 347,862

Int. Cl.³ B05B *3/08*

U.S. Cl. 239—236 **2 Claims**



1. An improved range controlled rotary sprinkler of the type having an impact arm-nozzle assembly including a bearing spring mounted on a bearing nut-sleeve assembly, wherein the improvement comprises:

a cam plate having a pre-selected outer contour and having an aperture therethrough, said cam plate horizontally and rotatably mounted on said bearing assembly with the sleeve of the bearing assembly received in the aperture of said cam plate; said cam plate provided with a downwardly projecting tab operable to engage a selected side of the bearing assembly nut; the bearing spring engageable with the top surface of said cam plate permitting retraction and rotation of said cam plate and placing a downward bias on said cam plate to hold said cam plate in a stationary position relative to the bearing assembly for controlling the directional range of water spraying from the nozzle; and

a lever pivotally mounted to the nozzle, said lever provided at one end with a deflector and at an opposing end with a cam follower adapted to follow the outer contour of said cam plate to control the pitch of the deflector and to thereby control the range of water spraying from the nozzle.

4,453,674

NOZZLE FOR A BURNER OPERATING ON LIQUEFIED PETROLEUM GAS

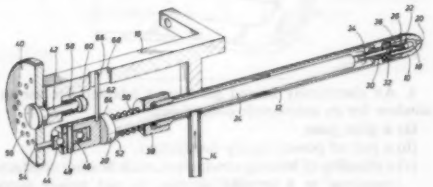
Georges Lorek, St. Aubin les Elboeuf, and Joel C. F. Blondet, Barneville sur Seine, both of France, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 29, 1982, Ser. No. 373,074

Claims priority, application France, May 11, 1981, 81 09325

Int. Cl.³ B05B *1/34*

U.S. Cl. 239—483 **2 Claims**



1. A burner for liquefied petroleum gas comprising:

a tubular body having an inlet for the liquefied petroleum gas;

a swirl chamber disposed adjacent one end of the tubular body;

a calibrated injector port, said swirl chamber debouching outwardly through said injector port;

a cylindro-ogival end piece, said cylindro-ogival end piece disposed inside said swirl chamber with its conical end projecting into said swirl chamber;

a control rod member disposed inside of said tubular body and having a tubular portion on one end, said cylindro-ogival end piece being attached to the end of said tubular portion, said tubular portion having ports for passage of the liquefied petroleum gas into the interior of said tubular portion and tangential ports for imparting a rotary motion to the liquefied petroleum gas as it debouches from the tubular portion into said swirl chamber;

a circular cam means, said cam being mounted for rotation about an axis parallel to the axis of said control rod member, and having a variable profile circular cam, the variable profile surface of said cam cooperating with a roller follower mounted on the other end of said control rod; and

biasing means disposed to bias said control rod into engagement with said cam, whereby said control rod is moved axially as said cam is rotated.

4,453,675

AERIAL SPRAYING APPARATUS

Robert Kodadek, York, Pa., and James H. Welch, No. Brunswick, N.J., assignors to Herculite Products, Inc., New York, N.Y.

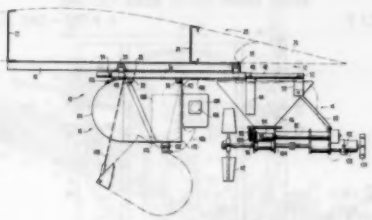
Filed Nov. 13, 1981, Ser. No. 321,023

Int. Cl.³ A01C *19/00*

U.S. Cl. 239—675 **5 Claims**

1. An aerial dispensing apparatus for adhesively coating and dispensing flakes containing an insect control substance comprising support means adapted to detachably connect said apparatus to the underside of an airplane wing, flake storage means carried by said support means, liquid adhesive storage

means carried by said support means, independent mixing chamber means carried by said flake storage means and spaced therefrom flake feed means and liquid adhesive feed means for supplying flakes and liquid adhesive from said flake storage means and said liquid adhesive storage means to said mixing chamber means wherein said mixing chamber means is comprised of a hollow cylindrical housing disposed below and connected to said flake feed means substantially perpendicular to the trailing edge of the wing when said apparatus is mounted on a wing of the airplane, said hollow cylindrical housing having a closed forward end and an open rear end, an aperture in the upper surface of said housing adjacent to the closed forward end for receiving flakes from said flake feed means,



liquid adhesive inlet means disposed rearwardly of said aperture, shaft means concentrically disposed in said cylindrical housing with the opposite ends thereof extending forwardly and rearwardly of said cylindrical housing, air flow responsive propeller means secured to the forward end of said shaft means, mixing blade means secured to said shaft means within said cylindrical housing for maintaining said flakes airborne during application of an adhesive to said flakes through said adhesive inlet means and for ejecting said flakes from said housing directly into the atmosphere and spinner means secured to the rear end of said shaft means adjacent to and spaced from the open end of said cylindrical housing for contacting the ejected coated flakes to assist in scattering said adhesive coated flakes.

4,453,676

SHREDDING MACHINE WITH WASHER AND DRIER

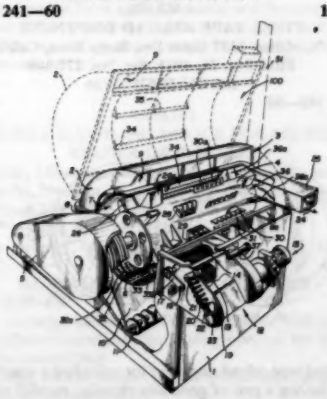
Farioli Arnaldo, Via Risorgimento, 40/A, Cento (Ferrara), Italy

Filed Sep. 30, 1981, Ser. No. 307,167

Claims priority, application Italy, Jan. 23, 1981, 3316 A/81; May 8, 1981, 3428 A/81

Int. Cl.³ B02C *23/20, 23/38*

U.S. Cl. 241—60 **14 Claims**



1. Machine for cutting up and shredding broad pieces of material, made particularly of synthetic resin, and for subsequently washing and drying said shredded material, characterized by the fact that the machine comprises, placed in series, two devices, one of which cuts up and shreds said material, and the second of which washes thoroughly and subsequently partially dries said shredded material in a first part thereof, and then in a second part of the second device completes the drying of said shredded material commenced in the first part, wherein said one device comprises: a drum rotating inside a basket carried by a containment barrel in such a way as to form a hollow space in between said basket and said barrel, said basket being provided with an inlet for the material to be processed and an outlet for the processed material, in opposite terminal areas; a device for moving the ingoing material towards said inlet; at least a first set of cutter blades fixed to the rotating drum and so placed as to be uniformly distributed over the circumference thereof in the region of said inlet, with their cutting edges inclined with respect to the axis of said drum in such a way as to cause the material, as it is gradually cut up, to move towards said outlet; at least a second set of cutter blades fixed to the rotating drum, following on after said first set of blades in such a way as to be distributed over the circumference of said drum, with their cutting edges perpendicular to the axis thereof; at least one set of beaters fixed to the rotating drum, following on after said second set of blades, these also being distributed uniformly over the circumference of the rotating drum and inclined with respect to the axis thereof in such a way as to cause the material, as it is gradually beaten, to move towards said outlet; first, second and third contrast elements fixed to said basket and designed to operate in contrast with said first and second set of blades and with said beaters fixed to the drum; and at least one impeller, following on after said set of beaters in the region of the outlet, fixed to the drum and able to remove the cut up and beaten material from the basket and to channel it into a connecting duct that runs into the entry point to said second device.

4,453,677

DEVICE FOR DOFFING A BOBBIN

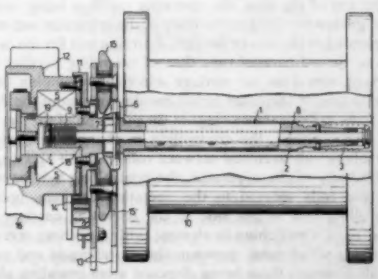
Alois Holzer, Wehringen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 270,346, Jun. 4, 1981. This application Jun. 27, 1983, Ser. No. 507,758

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022041

Int. Cl.³ B65H *54/44*

U.S. Cl. 242—18 R **1 Claim**



1. A device for doffing bobbins on a winding mechanism having a housing with a bobbin holder pivotally connected thereto consisting of a spindle with clamping tongs thereon constructed and arranged for movement between bobbin clamping and release positions, a rotatable bushing at one end of the spindle, a slidable ram extending through the bushing and spindle connected at one end to the clamping tongs, biasing means connected between the bushing and the other end of

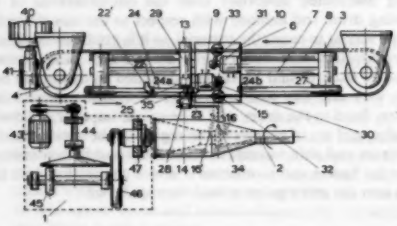
the ram urging the ram and the clamping tongs to the bobbin clamping position, a conical slider slidable on the bushing and connected to the ram, a brake disc connected to rotate with the bushing, means for pivoting the bobbin holder between winding and doffing positions, and a thrust member connected to the housing arranged to engage and shift the conical slider at the doffing position of the bobbin holder whereby the ram connected to the slider shifts against the force of the biasing means to thereby move the clamping tongs to the bobbin release position, the thrust members including a brake shoe connected thereto that engages the brake disc at the doffing position to stop the rotation of the spindle.

4,453,678

APPARATUS FOR THE FORMATION OF YARN PACKAGES

Blagoy A. Andonov, and Yordan V. Pirgov, both of Sofia, Bulgaria, assignors to Institute PO Obleklo I Textil, Sofia, Bulgaria

Filed May 13, 1982, Ser. No. 377,973
Claims priority, application Bulgaria, May 13, 1981, 52058
Int. Cl.³ B65H *54/10, 54/16, 54/36*
U.S. Cl. 242—27 **5 Claims**



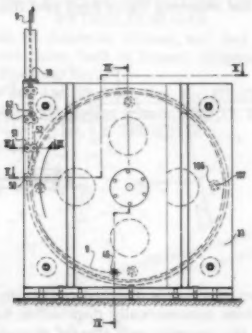
1. Apparatus for the formation of packages of elongaged flexible material wound upon a pirn, comprising a body means on the body for supporting and rotating the pirn, an operating carriage mounted for reciprocation parallel to the axis of the pirn, means for reciprocating the operating carriage with a basic reciprocating movement lengthwise of the pirn, a vibrator mounted upon the operating carriage, a thread guide vibrated by the vibrator in a direction lengthwise of the pirn with an amplitude which is a fraction of the amplitude of reciprocation of the operating carriage, a controlling mechanism for insuring the periodic translational shifting of the thread guide to the top of the pirn, the operating carriage being mounted upon guideways fixed to the body of the apparatus and extending parallel to the axis of the pirn, a driving belt for the carriage having spaced parallel runs thereof extending parallel to the carriage, means on the carriage selectively clamping the carriage to one or the other of the rectilinear runs of the driving belt so as to drive the carriage in the direction of the run of the belt thus gripped, the controlling mechanism comprising a controlling belt stretched between rollers at the opposite ends of the body of the apparatus, the controlling belt having its opposite ends secured to the operating carriage, upon the controlling belt at one side of the operating carriage there being fixed a switching-in element with a pushing arm and a switching-off element, between the switching-in and switching-off elements there being disposed a commanding electromechanical device, such commanding electromechanical device comprising a controlling carriage upon which there is mounted a switching block with a switching-in dog disposed between the switching-in element and the switching-off element on the controlling belt, the commanding electrodmechanical device also including a controlling transducer mounted upon the controlling carriage for commanding the periodic translational shift of the operating carriage to the top of the pirn and therewith the thread guide.

4,453,679

APPARATUS FOR WINDING AND UNWINDING A FLEXIBLE ROD

Edmond Thuries, Meyzieu; Maurice Mähl, Decines; Jean-Paul Masson, Villeurbanne, and Louis Malik, Caluire, all of France, assignors to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed Mar. 26, 1982, Ser. No. 362,323
Claims priority, application France, Mar. 31, 1981, 81 06440
Int. Cl.³ B65H *75/00*
U.S. Cl. 242—54 A **4 Claims**



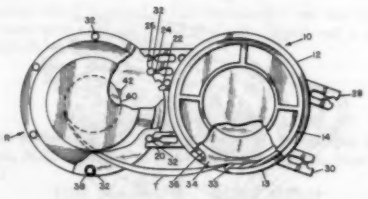
1. Apparatus for winding and unwinding a flexible rod, said apparatus including a drum on which said rod is wound in contiguous turns, said drum having a groove at its periphery, a band surrounding an end surface of the drum, said groove and said band defining a volume enclosing the rod, said volume having a rectangular cross-section whose small side is slightly larger than the diameter of the rod, means for disposing said drum between two fixed parallel plates and for mounting said drum to a horizontal shaft set in spherical bearings allowing angular play of up to eight degrees between said drum and said shaft with said drum inclined relative to the shaft such that said shaft forms an angle of two to eight degrees with the perpendicular to the plane of the drum with the groove bearing said rod being inclined relative to the shaft axis to the same degree such that the rod forms a number of turns around the drum, leaves the drum at the same point regardless of the extent to which it is wound on the drum.

4,453,680

STEEL TAPE RELOAD DISPENSER

Douglas N. Miller, 1137 Butte Dr., Santa Rosa, Calif. 95401

Filed Jun. 26, 1981, Ser. No. 277,849
Int. Cl.³ B65H *75/16*
U.S. Cl. 242—85 **4 Claims**



1. A steel tape reload dispenser for reloading a standard tape housing having a pair of generally circular, parallel side walls interconnected by posts around the peripheries thereof comprising:

a cylindrical cup to receive a replacement tape;

at least one pair of circumferentially spaced clothespin-like clips extending from the cylindrical wall of said cup to grip adjacent peripheral posts on a standard tape housing so that said cup and housing are interconnected juxtaposed with axes parallel; and

a tape discharge opening in the side of said cup.

4,453,681

WINDER FOR A SAFETY BELT

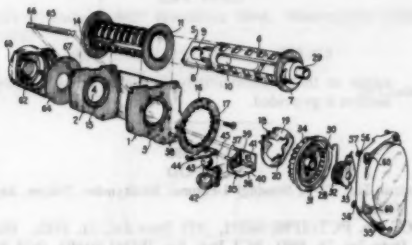
Daniel Gueguen, Montesson, and Jacques Rothéra, St. Michel, both of France, assignors to Autoliv AB., Vargada, Sweden

Filed Oct. 22, 1982, Ser. No. 436,129

Claims priority, application France, Oct. 28, 1981, 81 20230

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.4 A **9 Claims**



1. A self-locking winder for a safety belt for use on a vehicle by an occupant, said winder comprising a support, a mandrel including a sleeve of moulded plastics material, a metal reinforcing bar mounted in the sleeve and a reel mounted on the sleeve for receiving a strap of the safety belt wound on the reel, said sleeve being journalled in said support for mounting the mandrel on said support so that the mandrel is rotatable about an axis relative to the support, a torsion spring associated with the mandrel for biasing the mandrel to rotate in a strap winding direction about said axis, a locking device associated with the mandrel for locking the mandrel against rotation about said axis and preventing the unwinding of the strap in the event of impact on said vehicle, said locking device including means fixed against rotation relative to said support, a cam which defines a locking portion and a cam profile, the reinforcing bar having, at an end thereof, bared portions which project from the material of said sleeve and are cooperative with said cam profile, and means for shifting said cam profile against said bared portions for causing said locking portion of said cam to engage said means fixed against rotation and thereby lock said bar against rotation relative to said support when said mandrel is rotated by unwinding of said strap by the occupant due to an impact on said vehicle.

4,453,682

CARTRIDGE HANDLING DEVICE FOR MICROFILM READER OR THE LIKE

Keijiro Ishii, Yokohama; Keiji Nakatani, Kawasaki, and Seiichi Yamagishi, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Apr. 19, 1982, Ser. No. 369,866

Claims priority, application Japan, Apr. 23, 1981, 56-59464[U]

Int. Cl.³ G03B *1/04, 23/12*; G11B *23/08*

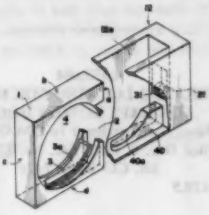
U.S. Cl. 242—192 **1 Claim**

1. In a cartridge handling device employable with cartridges used in different cartridge film feeding systems, the film feeding system comprising:

a cartridge mount located in said device and having a cartridge receiving pocket;

a wound film containing cartridge of parallelepiped configuration with square front and rear face perpendicular to the axis of the contained wound film and rectangular peripheral faces, a first of said peripheral faces having a film outlet and an opening into which a film feed roller member is movable and which communicates with the interior of the cartridge;

a misloading preventing member separably located in said



receiving pocket and separably engagable with said opening only when said cartridge is properly oriented in said receiving pocket and having a guide face functioning as a film guide when said member engages said opening; and

a feed roller located in said device and movable into said cartridge disposed in said pocket.

4,453,683

MAGNETIC TAPE CASSETTE ARRANGEMENTS

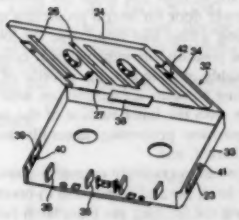
Karl-Juergen Reimer, Frankenthal; Dietmar Pfefferkorn, Hemsbach; Eberhard Koester, Frankenthal; Norbert Kreimes, Ludwigshafen; Wilhelmus Andriessen, Wachenheim; Herbert Wagner, Ludwigshafen, and Werner Wagner, Oberkirch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,630

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951951

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 **19 Claims**



1. A cassette arrangement for a recording medium in strip or tape form, particularly a magnetic tape, for use with a recording and/or playback apparatus having drive means and scanning means,

said cassette arrangement comprising two separate components, namely an approximately rectangular outer cassette housing and an inner protective reel-holder,

said cassette housing having a bottom part and a lid part, having openings for admitting said drive means and scanning means and, in one of said openings which is located adjacent the front of said housing, guide means for said recording medium, and also having guiding and holding rails in said lid and/or bottom parts for internally receiving, when said housing is open, said reel-holder, and to position said holder with respect to the tape guide means, and

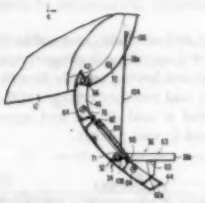
said reel-holder being in the form of a substantially closed, flat container the interior of which, circumferentially, is bordered by at least three side walls, and said holder

accommodating the hub or hubs on which said recording medium is wound to form said reel or reels, in a location or locations such as to permit, in cooperation with said guiding and holding rails, introduction of said reel(s) into the open cassette housing in the correct position for operation.

4,453,684
STEP OPERATED LOCKING MECHANISM FOR AIRCRAFT LOWER DOOR

John Hanks, Reno, Nev., assignor to OMAC, Inc., Reno, Nev.

Filed Dec. 9, 1981, Ser. No. 329,093
Int. Cl.[3] B64C *1/24*
U.S. Cl. 244—129.5 **3 Claims**



1. In an aircraft including a fuselage, a generally rectangular doorframe along one side of the fuselage and defining a vertical axis doorway, a generally rectangular upper door, hinge mounted along its upper, horizontal edge to the top of said doorframe for pivoting about a horizontal axis, a generally rectangular lower door, hinge mounted about its lower horizontal edge to the bottom of said doorframe, said upper and lower doors forming a sectional clamshell type door assembly for said aircraft, at least one latch pin mounted along a side edge of the lower door for lateral projecting movement into a suitable opening within said doorframe for locking the lower door in closed position, the improvement comprising:

a step pivotably mounted on the interior of the lower door for pivoting between a first position with the step generally flush with the inner surface of the inner door and a second position projecting generally horizontally outwardly thereof, and

a linkage system operatively connecting said step to said at least one latch pin and responsive to pivoting of said step for shifting the latching pin from latch projected position when the step is in its first position, to pin retracted, door release position when said step is pivoted to said second, projected position.

4,453,685
MAIL BOX BRACE

Bunny D. McMurray, Rte. 3, Box 23, Winnsboro, La. 71295

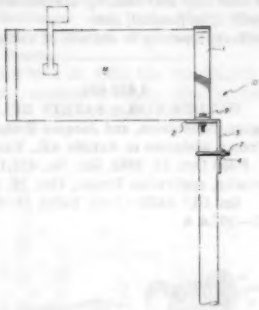
Filed Mar. 2, 1981, Ser. No. 239,388
Int. Cl.[3] A47G *23/02*
U.S. Cl. 248—146 **5 Claims**

1. A mail box brace comprising, in combination:

a horizontal planar shelf upon which an end portion of the mail box rests,

an inverted U-shaped strap overlying the mail box and fastened to said shelf to firmly affix the mail box to said shelf.

and means for attaching said shelf to a support post wherein said strap has an opposed termini outwardly extending horizontal flanges for affixing to said shelf wherein said means for attaching said shelf to the support post comprises a vertical plate joined to said shelf at respective

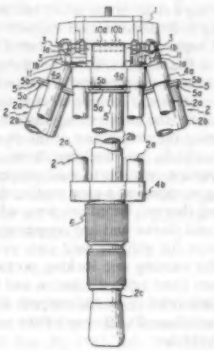


edges so that a substantially L-shaped bracket in cross section is provided.

4,453,686
TRIPOD

Tatsuo Ina, 22-11 Sendagi 1-chome, Bunkyo-ku, Tokyo, Japan (112)

PCT No. PCT/JP80/00291, 371 Date Jul. 21, 1981, 102(e) Date Jul. 21, 1981, PCT Pub. No. WO81/01601, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 28, 1980, Ser. No. 285,129
Int. Cl.[3] F16M *11/38*
U.S. Cl. 248—168 **7 Claims**



1. A tripod for cameras, comprising in combination:

(a) a tripod head (**1**) with sides and a lower portion, support walls (**1*a*, 1*b***) at said lower portion;

(b) elongated leg units (**2**), said leg units being pivotally supported on side tripod head (**1**), said leg units (**2**) having an upper portion and an outer end above said upper portion, pivot means (**3**) at said upper portion for pivoting said leg units;

(c) projections (**10*a*, 10*b***) at said outer ends;

(d) a support shaft (**11**) supported by said support walls (**1*a*, 1*b***) for each leg unit;

(e) regulators (**12**) for each leg unit with spring means (**16**), each of which is supported on said shaft (**11**) in such a manner that the regulator (**12**) is urged in a direction at right angles to the corresponding elongated leg unit (**2**); and,

(f) alternately-arranged projecting means (**12*a*, 12*a***) and recesses (**12*b*, 12*b***) on each regulator, disposed on one side

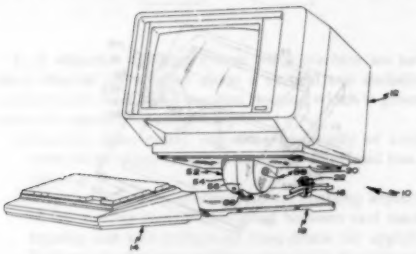
of said tripod head (1) and opposite said projections (10a, 10a) so that said projections come into contact with said regulators when said leg units (2) are opened in the usual condition, to thereby allow said leg units to be set at the most-frequently-used leg-opening angle, said projections (10a, 10a) provided on the leg units comming into engagement, when said regulators have been displaced in the direction at right angles to the leg units (2) against the spring means forces applied thereto, to allow the leg units (2) to be set at an increased leg-opening angle, said regulators (12) which have been displaced in the manner mentioned being returned to their original position when the leg units (2) are thereafter closed.

4,453,687

SWIVEL/TILT MOUNTING DEVICE FOR A CATHODE RAY TUBE

Harry C. Sweere, 5637 Woodlawn Blvd., Minneapolis, Minn. 55417

Filed Mar. 1, 1982, Ser. No. 353,015
Int. Cl.³ F16M *11/12*
U.S. Cl. 248—183 **10 Claims**



1. A swivel tilt mounting device for mounting a product, said device comprising:

a base plate for placement on a supporting surface;

a support plate for supporting said product;

a first member rotatably mounted to one of said plates for allowing rotation in a first plane;

a second member attached to the other said plate, said second member being rotatably attached to said first member and rotatable about an axis of rotation in a second plane substantially normal to said first plane;

means for frictionally impeding rotation in said second plane, said friction means comprising:

at least one friction piece attached to said first member and having at least one first friction surface;

at least one friction piece attached to said second member and having at least one second friction surface; and

means for pressing said first and second friction surfaces together in sliding relationship, said friction surfaces being spaced from said axis of rotation, one of said friction surfaces being of ultra-high molecular weight polyethylene and the other said surface being of metal.

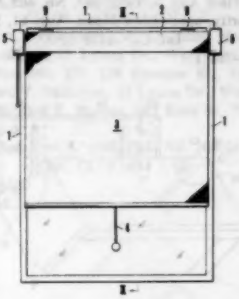
4,453,688

BLIND MOUNTING DEVICE

Akira Nakajima; Takayoshi Furukawa, both of Kanagawa; Atsuo Nakano, Tokyo; Kunio Yamashiro, Sagamihara, and Katsumi Goda, Naka, all of Japan, assignors to Kabushiki Kaisha Nichibei, Tokyo, Japan

Filed Jan. 12, 1982, Ser. No. 338,986
Claims priority, application Japan, Jan. 23, 1981, 56-9270[U]
Int. Cl.³ A47H *1/10*
U.S. Cl. 248—262 **1 Claim**

1. A device for mounting a blind on a wall surface comprising an elongated base plate having a pair of spaced edges extending in the elongated direction thereof, a pair of brackets mounted on said base plate and spaced apart thereon in the elongated direction of said base plate at a predetermined distance corresponding to the length of the blind, and at least a pair of angle shaped supporting members each fixable to a wall surface in spaced apart relation at a distance less than the elongated dimension of said base plate, each said supporting member having a first leg and a second leg disposed substantially perpendicularly to said first leg, each of said first and second legs being selectably fixable to the wall surface, a hook member pivotally mounted on one of said legs and fixable to



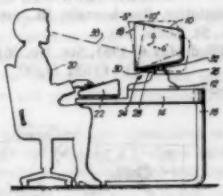
said leg in a given position, said hook member having opposite ends thereon shaped to form hooks disposed in spaced relation extending transversely of the elongated direction of said base plate, said hook members being disposed in spaced relation to said leg on which said hook member is pivotally mounted, and said elongated edges of said base plate being shaped to interfit with said hooks so that said base plate can be slid in the elongated direction thereof while in engagement with said hooks, and means for fixing said base plate relative to said hook members.

4,453,689

ADJUSTABLE MOUNTING

Warren K. Ellis, Constance Bay, and Donald T. Chadwick, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 10, 1981, Ser. No. 281,992
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—288.1 **12 Claims**



1. An adjustable mounting arrangement for supporting one body relative to another body, comprising:

a pivotal coupling, having a pivot axis, for coupling the bodies pivotally together;

a plunger extending in a chamber and movable relative thereto in a direction extending transversely to, and at a position spaced laterally from, said pivot axis, such that pivoting of said one body about said pivot axis is accompanied by the plunger moving into or out of said chamber;

spring means for urging said plunger out of said chamber; and

frictional locating means for resisting movement of said

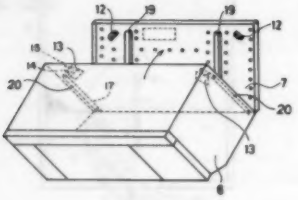
plunger into and out of said chamber; wherein the spring means and frictional locating means are selected such that the sum of their respective forces upon said plunger are such as to counteract pivotal movement due to the weight only of said one body.

4,453,690

MOUNTING ASSEMBLY FOR COOKING APPLIANCES

Koichi Takeuji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 4, 1982, Ser. No. 405,247
Claims priority, application Japan, Aug. 11, 1981, 56-126509
Int. Cl.³ A47F 5/00
U.S. Cl. 248—309.1 5 Claims



1. A mounting assembly for mounting a housing on a wall comprising:

a housing;

a mounting plate adapted to be secured to a wall, said mounting plate including an engaging projection formed at a bottom of the mounting plate;

an engaging indent formed at a bottom of said housing in order to accommodate said engaging projection formed on the mounting plate;

an engaging portion formed on said mounting plate;

an aperture formed in a rear wall of said housing at a position corresponding to said engaging portion so that said engaging portion projects into an interior portion of said housing when the housing is mounted on said mounting plate; and

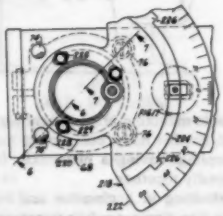
a coupling member disposed on the inner surface of said rear wall of said housing, said coupling member being accommodated to retain said engaging portion when said housing is mounted on said mounting plate.

4,453,691

RADIAL ARM SAW

Brian R. Hochstatter, Bourbonnais, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 6, 1981, Ser. No. 261,258
Int. Cl.³ F16M 13/00
U.S. Cl. 248—542 4 Claims



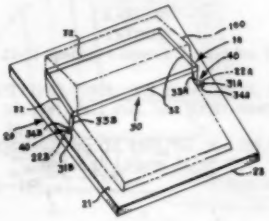
1. In a radial arm saw having a horizontal saw supporting horizontal radial arm mounted at one end on a vertical column for vertical and rotational movement thereon and in which various angular positions of said arm around said vertical column are indicated and releasably fixed; the improvement comprising a round vertical column, a hollow cylindrical support member movable vertically on said column and being keyed to said column against rotation thereon, a radial arm having one end supported on said support member for rotation thereon and having a portion extending radially therefrom, an index plate having an inner portion fixed to said support member and having a portion extending radially therefrom on which angular indicia ia marked, and means mounted on said radially extending portion of said arm for releasably clamping said arm to said radially extending portion of said index plate.

4,453,692

SECURITY DEVICE

William D. LeDoux, 5545 Marconi Ave., #225, Carmichael, Calif. 95608, and Allan A. Johannes, 4905 Arbor Dr., Sacramento, Calif. 95834

Filed Jul. 27, 1981, Ser. No. 286,823
Int. Cl.³ E05B 73/00
U.S. Cl. 248—552 5 Claims



1. A security device for protecting a preselected article against theft, wherein said article is useable while being protected by said device, comprising:

a. a means for supporting said article;

b. a frame structure dimensioned and configured to enclose said preselected article with said frame structure fitted over and around said article, said frame structure being made of a rigid and substantially nonbendable material and including a rectangular portion, at least two support legs extending therefrom in parallel equal spaced-apart relationship, with each support leg having a first end fixedly attached to said rectangular portion, and a second end having a flange, said flange being in contact with said support means in order for said frame structure to be in contact in at least two locations on an outer surface of said support means, and said support means and said frame structure having aligned openings at each of said two locations of contact; and

c. means for releasably connecting and locking said frame structure to said support means, wherein said releasably connecting and locking means includes a retaining member for each location of contact, with each retaining member sized, shaped, and disposed such that a first end thereof is positioned and captured above said outer surface of said support means, and a second end thereof is positioned and captured below an inner surface of said support means, with one of said first or second ends of each of said retaining members having an opening therethrough into which a locking member is removably inserted, thereby preventing this end from passing through its corresponding aligned openings, and the other of said first or second end of each of said retaining members having a plate-like member attached thereto, thereby preventing this end from passing through its corresponding aligned openings.

4,453,693

DAMPING DEVICE FOR MACHINE SETS HAVING A VERTICAL ROTOR SHAFT

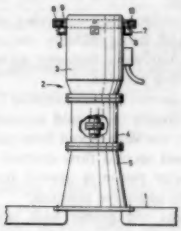
Peter Krux, Dortmund, Fed. Rep. of Germany, assignor to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 280,068

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 3025587

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—559 3 Claims



1. A vibration damping system for a machine set having parts adapted for rotation about a vertical axis including a vertical rotor shaft and a machine housing which is generally vertically upstanding comprising:

cushioning mass means consisting essentially of resilient material arranged to extend annularly about said machine housing;

first spring means including means for enabling adjustment of the rigidity thereof connected between said machine housing and said cushioning mass means for applying a horizontally directed resilient connection therebetween;

second spring means resiliently suspending said cushioning mass means connected between said housing and said cushioning mass means providing a vertically directed resilient connection therebetween; and

holding members attached to the sidewall of said machine housing arranged below said cushioning mass means to support at least said vertically directed second spring means.

4,453,694

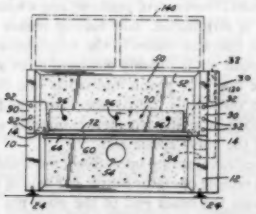
MACHINE BASE

Donald C. Andreasson, Lake Orion, Mich., assignor to Detroit Reamer and Tool Company, Troy, Mich.

Filed Mar. 31, 1982, Ser. No. 363,902

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—559 2 Claims



1. A machine base for accuracy metal removal as by cutting, grinding and inspection which comprises:

(a) a massive reinforced concrete frame composed of parallel vertical side walls connected by a vertical cross-wall between the ends of the side walls,

(b) a massive horizontal steel plate connecting and supported between said side walls on one side of said cross-wall,

(c) a massive granite slab supported horizontally on said plate spaced from the end and cross-walls for supporting a machining console and workpiece support, and

(d) a vertical steel plate secured between said end walls against the outer edge of said granite slab to close the space between the ends of said slab and said end walls.

4,453,695

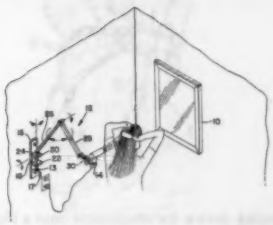
HAIR DRYER MOUNT

Susan C. Sennott, 138 Sprague St., Dedham, Mass. 02026; Dorothy M. Mulligan, 12 Lyons Dr., Westwood, Mass. 02090; William J. Sennott, III, 138 Sprague St., Dedham, Mass. 02026; Richard T. Mulligan, 12 Lyons Dr., Westwood, Mass. 02090, and Richard E. Barton, 187 Kent St., Scituate, Mass. 02066

Filed Nov. 5, 1980, Ser. No. 204,261

Int. Cl.³ F16M *1/00*

U.S. Cl. 248—660 8 Claims



1. A hair dryer mount for suspending a hair dryer about the head of a user and freely positionable and repositionable for directing the hair dryer air flow in a desired direction comprising:

an adjustable support including;

a U-shaped yoke having a pair of upstanding arms, and having a base connecting said upstanding arms and having a bore through said base;

a generally cylindrical trunnion having coaxially aligned bores extending from the opposite end surfaces thereof into said cylindrical trunnion,

said trunnion including a turret section extending from the sides of said trunnion and having a bearing surface for supporting the base of said yoke;

said turret bearing surface having a bore extending therefrom into said turret section;

a fastening means extending through said yoke base bore and into said turret section for connecting said yoke to said turret section and permitting rotational motion therebetween;

a nest having a base and two upstanding walls extending from said base and forming a U-shape, said walls spaced apart sufficiently to accommodate said cylindrical trunnion therebetween;

said nest walls having bores extending therethrough aligned with said cylindrical trunnion bores;

a guide extending across said nest base substantially parallel to said nest walls and curving about a center of curvature below said nest base;

means depending from the bottom of said nest base for engaging the hair dryer;

adjustable clamping means extending through said nest between said upstanding walls and along said guide and looping below said nest base for adjustably engaging the hair dryer; and,

adjustable frictional coupling means extending through said bores in said upstanding nest walls and into said cylindrical trunnion bores for adjustably tightening said trunnion

and said nest together to permit restrained rotation therebetween;

whereby said yoke, said trunnion and said nest provide a freely rotatable wrist type joint capable of rotation about the axis of the trunnion and the axis of the trunnion turret to permit the air flow of the hair dryer to be directed in a desired direction.

4,453,696

DEVICE FOR ATTACHMENT OF A RESILIENT AND/OR FLEXIBLE TUBE ONTO A NIPPLE, NOZZLE OR LIKE CONNECTION

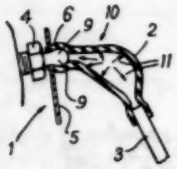
John E. Witt, Crosstrees, Oakcroft Rd., West Byfleet, Surrey, England KT 14 6JH

Filed Dec. 6, 1979, Ser. No. 100,897

Claims priority, application United Kingdom, Dec. 6, 1978, 7847384; Dec. 11, 1978, 7847944; Feb. 5, 1979, 7903892

Int. Cl.³ F16L 55/14

U.S. Cl. 251—4 16 Claims



8. A bleeding device for attachment onto a bleed nipple of a brake system of a motor vehicle in which the nipple is provided with a smooth bulbous head portion at one end thereof and tapers inwardly to a portion of minimum diameter adjacent to the head portion and remote from said end comprising a flat retaining element having first, second and third apertures therein, a resilient flexible tube threaded through the first and the second apertures in opposite directions, said flexible tube having an axial channel extending therethrough with a diameter smaller than the nipple and being stretchable to accommodate the nipple at an end of said flexible tube a transparent tube threaded through the third aperture and connected to the flexible tube at the end thereof adjacent to the second aperture, the diameter of the first aperture being larger in diameter than the resilient flexible tube and smaller than the diameter of the tube when the tube end is stretched over and accommodating said nipple, and the diameter of said aperture being large enough to permit the plate to be forced past the head of the nipple when the tube end is accommodating said nipple, whereby the end of said tube may be stretched over the nipple and the plate thereafter forced over the nipple to retain the tube and nipple in coupled relations.

9. A bleeding device as claimed in claim 8, wherein the resilient flexible tube has a valve arrangement therein.

4,453,697

REMOTE AIR OPERATOR FOR AN AIR VALVE, WITH MANUAL OVERRIDE AND INDICATOR

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to MAC Valves, Inc., Wixom, Mich.

Filed Mar. 1, 1982, Ser. No. 353,046

Int. Cl.³ F15B 13/042; F16K 31/122, 31/143

U.S. Cl. 251—14 5 Claims

1. In an air valve, the combination including, a valve body having a valve spool bore in which is operatively mounted a valve spool for controlling the flow of fluid through passages in the valve body, and wherein the valve spool is moved to a first flow control position by an operator biasing means engageable with a first end of the valve spool, and wherein the valve spool has a second end that is positioned at an end of the valve spool bore that is open at one side of the valve body, and the valve spool is movable to a second flow control position by a remote air operator means, characterized in that the remote air operator means includes:

(a) an operator body having one end attached to said one side of the valve body over said open end of the valve spool and the second end of the valve spool bore in the valve body;

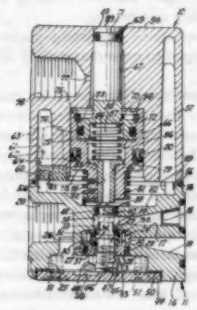
(b) a remote operator piston cylinder formed in the operator body, and extended axially inward thereof from said one end that is attached to said valve body, and having an inner end wall;

(c) a remote operator piston, having an upper end and a lower end, and being slidably mounted in said piston cylinder and moveable between an inoperative position and an operative position;

(d) a push pin carried by said remote operator piston and engageable directly with said second end of the valve spool to move the valve spool from said first flow control position to said second flow control position when the remote operator piston is moved from the inoperative position to the operative position;

(e) biasing means engageable with said remote operator piston for normally biasing said remote operator piston to the inoperative position;

(f) air passage means in said operator body and communicating at one end with the inner end of the piston cylinder



and communicating at the other end with a remote air pressure signal inlet port, whereby when an air pressure signal is conducted from a remote location to the air pressure signal inlet port, said air pressure is transmitted through said air passage means into the piston cylinder where it moves the remote operator piston from said inoperative position to said operative position, whereby the valve spool is directly engaged by the push pin to move the valve spool from said first flow control position to second flow control position, and when the air pressure signal is terminated, said biasing means will return the remote operator piston to the inoperative position;

(g) said push pin is slidably mounted in an axial bore in said remote operator piston and it has one end normally extended outwardly below the lower end of the remote operator piston and engageable directly with said second end of the valve spool; and,

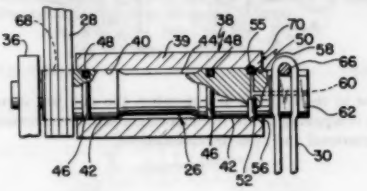
(h) an overtravel spring operatively mounted in an axial bore in said remote operator piston and having one end engageable with the other end of the push pin to normally restrain movement of the push pin relative to the remote operator piston but permit the remote operator piston to continue movement toward the valve body, after the valve spool has been seated in said second flow control position, so that the valve spool does not absorb the total force of the air pressure signal against the remote operator piston.

4,453,698

STUFFING BOX WITH O-RING DETENT FOR CONTROL MECHANISM OF EMERGENCY VALVE

Joseph H. DeFrees, Warren, Pa., assignor to Allegheny Valve Company, Warren, Pa.

Filed Apr. 29, 1982, Ser. No. 373,098
Int. Cl.³ F16K *31/00*
U.S. Cl. 251—144 10 Claims



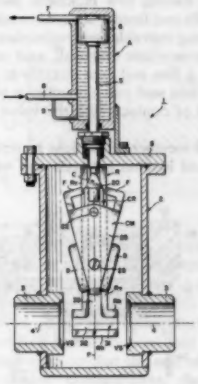
1. In a liquid discharge control means for a liquid storage tank having an outlet port with a conduit member for liquid coacting with said port in depending relation therewith, an emergency valve operatively associated with said port and being normally biased to closed position wherein discharge from said tank into said conduit member is normally prevented, said emergency valve including a projection extending downwardly into said conduit member, and a crank including a rotatable shaft, said crank being adapted to engage said projection of said emergency valve, and open the latter, to thereby permit liquid discharge from said tank, said shaft passing through the defining wall of said conduit member to the exterior thereof, and adapted for connection to means for causing rotation of said shaft to thus cause actuation of said crank and opening of said emergency valve, the combination therewith of a stuffing-box mounted on said conduit member and coacting with said shaft for supporting said shaft in operative position and for preventing leakage of liquid from the interior of said conduit member to the exterior thereof lengthwise along said shaft, said stuffing box comprising a tubular-like member defining a passageway open at both ends thereof with one end disposed interiorly of the conduit member and the other end disposed exteriorly of the conduit member, said shaft being rotatably disposed in said passageway and adapted upon rotation to cause actuation of said emergency valve to open the latter, said shaft having spaced bearing portions thereon adapted for rotative engagement with said passageway, groove means disposed generally adjacent at least certain of said bearing portions and receiving sealing means therein for sealing the shaft with respect to the interior of said tubular-like member, to prevent leakage of liquid lengthwise of said shaft, the exterior end of said stuffing box having releasable, non-threaded detent means for locating said shaft relative to said tubular-like member lengthwise thereof, the corresponding end of said shaft outwardly of said detent means having means for providing for rotation of said shaft, said detent means comprising a circumferential groove in said passageway of said tubular-like member and a generally confronting groove in said shaft with a resilient O-ring disposed in said confronting grooves and releasably locking the shaft in lengthwise position relative to said tubular-like member while permitting rotation of said shaft, said tubular-like member including a circumferential inwardly convergent entry surface to said passageway on the exterior end of said tubular-like member for facilitating insertion and removal of said O-ring into and from coaction with said confronting grooves upon assembly or disassembly of said stuffing box, and wherein said entry surface converges into a generally longitudinally extending circumferential surface section which is spaced radially slightly greater from the lengthwise axis of said passageway as compared to the remainder of the defining surface of said passageway, said surface section being disposed adjacent said confronting grooves axially outwardly thereof in the direction of said exterior end of said tubular-like member.

4,453,699

GATE AND SWING VALVE

Eldon E. Hulsey, Houston, Tex., and Burton T. Mast, 9419 Stockport, Spring, Tex. 77373, assignors to Michael P. Breston; Joe Lance Hulsey, both of Houston and Burton T. Mast, Spring, all of, Tex.

Continuation-in-part of Ser. No. 171,577, Jul. 23, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,098
Int. Cl.³ F16K *31/143*
U.S. Cl. 251—63.4 2 Claims



1. A valve for controlling the fluid flow therethrough, comprising:

a fluid-operated actuator including an elongated stem;

a valve body defining a longitudinal flowway therethrough and having a pair of opposed valve seats;

a cam extending inwardly from the inner end of said stem;

a carriage extending inwardly from said cam;

a cradle mounted on said carriage for relative movement therebetween;

a wedge-shaped closure member hingedly supported by said cradle and having a pair of opposed followers operatively associated with said cam;

a rail having a vertical portion and a horizontal portion;

said cradle having a pawl member adapted to ride on said vertical rail portion; and

said closure member having a pair of guides adapted to cause said closure member to ride on said vertical rail portion when both said pawl member and said guides ride on said vertical rail portion, and said closure member being free to swing and then to linearly move under the influence of fluid flow toward either valve seat when the innermost one of said guides rides on said horizontal rail portion.

4,453,700

FLUID CONTROL VALVE ASSEMBLY

Hiromi Otsuki, Anjo; Yoshiki Maruchi, Toyohashi; Yukio Kawai, Toyota, and Toshihisa Ogawa, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 2, 1982, Ser. No. 344,959
Claims priority, application Japan, Feb. 5, 1981, 56-15684[U]
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—129 1 Claim

1. A proportional electro-magnetic fluid control valve assembly for controlling intake air flow into an engine, comprising:

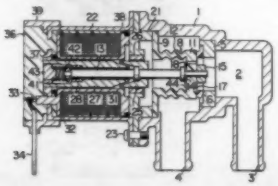
a valve including a valve body defining therein a fluid pas-

sageway having an inlet end and an outlet end, a valve seat located in said fluid passageway, a valve member movable between a closed position in which said valve member engages said valve seat for preventing a fluid from flowing through said fluid passageway from said inlet end to said outlet end and an open position in which said valve member is out of engagement with said valve seat for allowing the fluid to flow through said fluid passageway from said inlet end to said outlet end, and a valve stem connected to said valve member;

an actuator operatively connected to said valve stem for moving said valve member between said closed and open positions;

said valve member comprising a bellows formed of tetrafluoroethylene having low tackiness, said bellows having two end walls one fixedly secured to said valve body and the other being movable, said valve stem being connected to said other movable end wall, said other movable end wall having a free end face directly in contact with said valve seat when said valve member is in said closed position and out of contact with the valve seat in said open position;

an annular seal member of resilient material secured to said valve seat and located between said valve seat and said



other movable end wall of said bellows, said free end face being in direct contact with said annular seal member when said valve member is in said closed position;

said bellows including a hollow corrugated cylindrical wall extending between said fixed and said movable end walls in concentric relation to said valve stem, said movable end wall being formed with an opening therethrough to allow a fluid in contact with said free end face to be introduced into the interior of said hollow cylindrical wall;

said opening being communicated with the inlet end of said fluid passageway when said valve member is in said closed position;

said other movable end wall having an inner face opposite said free end face thereof, said inner face having its effective pressure receiving area equal to that of said free end face exposed to inlet pressure when said valve member is in said closed position; and

said actuator comprising a movable iron core secured to said valve stem, a fixed iron core secured to said valve body and a coil wound around said fixed iron core, said movable iron core being movable in proportion to a current value applied to said coil to proportionally move said movable end wall of said bellows between said closed and open positions.

4,453,701

SELF-TAILING WINCH

Richard D. J. Huggett, Horndean, England, assignor to Lewmar Marine Ltd., Hampshire, England

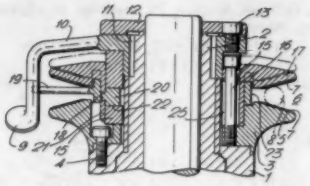
Filed Dec. 30, 1981, Ser. No. 335,849

Claims priority, application United Kingdom, Jun. 10, 1981, 8117819

Int. Cl.³ B66D *1/30, 1/78*

U.S. Cl. 254—371 **6 Claims**

1. A self-tailing winch comprising a winch drum, means mounting the drum for rotation about an axis, a self-tailing channel adjacent the drum, two jaw members defining the self-tailing channel, means constraining one said jaw member permanently to rotate with the drum, means mounting the other jaw member for limited rotational and axial displacement



relative to the said one jaw member, the said jaw mounting means comprising means for imposing a helical relationship on said rotational and axial displacements.

4,453,702

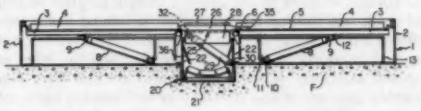
SLAG CONVEYING ARRANGEMENT

Harry E. Anderson, 307 Foxcroft Rd., Pittsburgh, Pa. 15220, and Raymond E. Heasley, 38 Silver La., McKees Rocks, Pa. 15136

Filed Sep. 22, 1983, Ser. No. 534,616

Int. Cl.³ B23K *7/02, 7/10*

U.S. Cl. 266—49 **12 Claims**



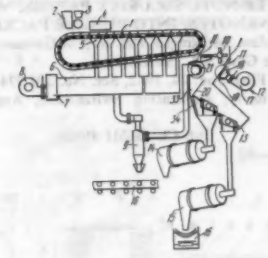
1. In combination, at least one water table adapted for use with a burning machine and a slag removal conveyor adjacent to and operative with said water table to remove slag therefrom, said water table comprising an open top water tank, dump frame means located in the open top of said water tank, burning bars supported on said dump frame means adapted to support at least one metal workpiece to be cut, means for tilting said dump frame means relative to said water tank and means for varying the level of water in said water tank, said slag removal conveyor comprising a continuous conveyor trough located adjacent to said water table, said conveyor trough including spaced sidewalls, end walls and a bottom wall, conveyor means located within and extending substantially throughout the length of said continuous conveyor trough adapted to receive slag from said dump frame means, a cover means located at the top of said conveyor trough and extending between said sidewalls and said end walls of said conveyor trough, means pivotally attaching said cover means to said dump frame means, means to tilt said cover means to provide access to said conveyor means within said conveyor trough, and seal means on said cover means extending between said cover means and said sidewalls and end walls of said conveyor trough, whereby said seal means prevent water from passing into said conveyor trough when the water level is raised for cutting metal workpieces located on said burning bars.

4,453,703

SINTERING MACHINE

Anatoly I. Ivanov, Donetsk; Igor A. Lokh, Zhdanov; Stanislav T. Pliskanovsky, Dnepropetrovsk; Boris G. Novikov, Zhdanov; Vitaly B. Fomin, Zhdanov; Nikolai M. Svinarenko, Zhdanov; Igor N. Krasavtsev; Tikhon T. Nesterenko, both of Donetsk; Alexandr D. Archikov, Makeevka; Evgeny A. Demidovich, Enakievo; Leonid F. Lukyanchenko, Donetsk; Nikolai D. Pryadko; Sergei G. Smerechinsky, both of Enakievo, and Jury V. Oleinik, Donetsk, all of U.S.S.R., assignors to Donetsky Politekhnichesky Institut, Donetsk, U.S.S.R.

Filed Nov. 19, 1981, Ser. No. 322,850
Int. Cl.³ C21B 7/22; C22B 1/20
U.S. Cl. 266—157 3 Claims



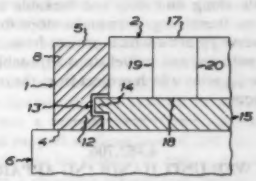
1. A sintering machine, comprising:
having an upstream and a downstream end,
a sinter belt;
vacuum chambers disposed under said sinter belt,
an assembly for loading a bed onto said sinter belt, mounted above said sinter belt at the upstream end;
an assembly for loading a charge onto said sinter belt, mounted downstream of said assembly for loading the bed;
an ignition hearth for igniting a charge, mounted downstream of said assembly for loading the charge;
a breaker for crushing sinter, mounted at the downstream end of said sinter belt;
a chute for discharging sinter, mounted beneath said breaker;
an air classifier within said chute for separating coarse fines from the sinter, comprising:
a fan mounted outside said chute;
a diffuser communicating with said fan, mounted outside the chute; and,
a movable grid located within said chute for varying speed of the air flow within said chute; to selectively determine the separation of fine and coarse sinter;
a movable partition operatively connected with said movable grid and mounted with said chute in front of said grid defining a settling chamber with a variable opening for fines of coarse sinter;
means for settling coarse fines, mounted within said settling chamber comprising:
first and second vibrating screens for separating a return and a bed respectively from the sinter;
a cooler for the return, mounted under the first vibrating screen and communicating with said settling chamber;
a cooler for the bed, mounted under the second vibrating screen;
a collector for removing process gases, mounted under said sinter belt;
a gas cleaning device for cleaning process gases, communicating with said collector;
an exhauster for sucking air through a layer of the charge being sintered, communicating with said gas cleaning device; and
a means for purifying air from the dust located downstream from said air classifier and communicating with said collector and with said device for settling coarse fines.

4,453,704

APPARATUS FOR RETAINING BLANKS IN WORKING MACHINES

Wlajko Mihic, Tegnérvägen 9, S-802 28 Gävle, Sweden

PCT No. PCT/SE79/00217, 371 Date Jun. 24, 1980, 102(e) Date Jun. 16, 1980, PCT Pub. No. WO80/00809, PCT Pub. Date May 1, 1980
PCT Filed Oct. 23, 1979, Ser. No. 197,801
Claims priority, application Sweden, Oct. 24, 1978, 7811063
Int. Cl.³ B23Q 3/06
U.S. Cl. 269—8 4 Claims



1. Apparatus for retaining a plurality of elongated blanks for shanks for carbide tips and the like comprising:
a frame having a top and a bottom and defining an opening extending from the top to the bottom to form at least one pair of opposed sides, said frame further having two branches extending upwardly from said frame along two of said opposed sides so that the end of the frame has a generally U-shaped configuration, the width of said branches being less than the width of the opposed sides from which they extend, said branches further defining slots along their inner side;
a washer member having a top, a bottom, and projections at opposite sides which are adapted to be received in the slots of said branches, said projections being smaller than said slots to enable movement of the washer in said frame; and
whereby elongated blanks can be fixedly placed in their longitudinal direction side by side inside the frame opening and be held therein, but can be accessible from both the top and bottom of the frame through the frame opening without reorienting the blanks from their held position, and wherein the blanks can be accessible from said frame bottom even when said blanks are recessed inwardly of the branch ends when the washer is not received in the slots, but wherein the washer fills the space between the recessed blanks and the end of the branch ends when the washer is received in the slots.

4,453,705

MOBILE WOODEN TRUSS FABRICATING APPARATUS

William D. McDonald, Rte. 1, Box 322 D, Monroe, Oreg. 97456

Division of Ser. No. 76,778, Sep. 18, 1979, Pat. No. 4,304,046, which is a continuation-in-part of Ser. No. 913,247, Jun. 6, 1978, Pat. No. 4,174,061. This application May 5, 1981, Ser. No. 260,716
Int. Cl.³ B25B 1/20
U.S. Cl. 269—37 7 Claims

3. A truss fabricating apparatus comprising a supporting bed, a truss fabricating jig on said bed defining a level support plane for truss lumber, said jig comprising a main jig rail formed in multiple sections, slotted adjusting means on the supporting bed and connected with said sections of the main jig rail whereby each rail section can be laterally adjusted relative to adjacent rail sections and locked in selected adjusted positions to enable supporting trusses of different sizes, said main jig rail sections being channel-like longitudinally and being slotted

longitudinally in their opposite sides, oppositely extending spaced parallel transverse jig arms on opposite sides of the main jig rail sections at right angles thereto, quick release swivel fasteners on the interior ends of the jig arms and being lockably and releasably engageable with the slots in the sides of the main jig rail sections, whereby said jig arms are individu-

ally adjustable along said slots and lockable at selected adjusted positions therealong, permanent stops for truss lumber on the transverse jig arms which project from one side of the main jig rail sections, and swivel stops adjustably mounted on the transverse jig arms which project from the opposite side of said rail sections.

4,453,706

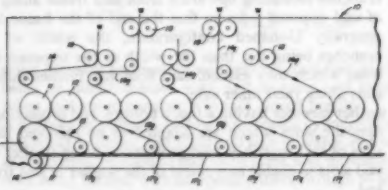
MULTIPLE WEB UNIT HANDLING APPARATUS WITH CUT-OFF ROLLS

John J. Bradley, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Mar. 21, 1983, Ser. No. 477,233

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **3 Claims**



1. Apparatus for producing stacks of web units comprising a frame,

a collection conveyor horizontally disposed on said frame,

means operably associated with said collection conveyor for moving the same at a predetermined speed,

a plurality of cutoff transfer devices successively aligned along said collection conveyor terminating in a discharge end, each said cutoff-transfer device including a transfer roll having an outer surface,

means associated with said transfer rolls for rotating the same to move said surface at said predetermined speed,

means for separately, advancing at slightly less than said predetermined speed a plurality of continuous webs, one into each of said cutoff-transfer devices, said cutoff-transfer devices providing individual web units,

means for controlledly transferring said individual web units from each of said cutoff-transfer devices to a series of points on said collection conveyor for advancing units thereon in synchronism with the units being delivered successively thereto to develop a series of stacks, each stack having a plurality of units therein,

said transferring means including belt means for traveling on said transfer roll in underlying relation to a web unit on said transfer roll whereby said belt means travels at said predetermined speed,

each said belt means being entrained about an idler roll spaced downstream relative to the path of collection conveyor movement from said transfer roll to provide a length of travel generally parallel to said collection conveyor to confine each individual web unit as the same is superposed onto a previously transferred individual web unit,

said surface of each of said transfer rolls, each said belt means and said collection conveyor all being arranged so that at the point of transfer of an individual web unit all of said transfer roll surface, belt means, individual unit and collection conveyor are traveling at the same speed and in the same direction whereby an individual web unit traveling with said transfer roll changes direction progressively during transfer without any substantial change in speed.

4,453,707

METHOD AND DEVICE FOR AUTOMATICALLY PROCESSING SHEET PILES OF NUMBERED MULTIPLE-NOTE SECURITY PAPERS, NOTABLY BANKNOTES, INTO BUNDLE PACKETS

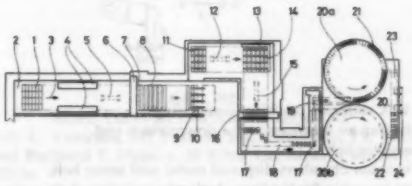
Runwalt Kühfuss, Metzingen, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Switzerland

Filed Jun. 24, 1982, Ser. No. 391,974

Claims priority, application Switzerland, Aug. 10, 1981, 5120/81

Int. Cl.³ B65H *39/08*

U.S. Cl. 270—60 **2 Claims**



1. A method of automatically processing piles of numbered sheets of security papers comprising a plurality of banknotes or the like, with matrix-forming notes arranged in m rows and n columns, belonging to different series of security paper, which consists in forming packets of bundles of sequentially numbered security papers, whereby one pile, in which all superimposed banknotes are numbered sequentially, comprise m strip piles of n banknotes each, cutting all the strip piles cyclically into bundles delivered sequentially to an intermediate storage device comprising at least one magazine drum having N magazines distributed uniformly along its outer periphery, said drum being rotatably driven at an average speed such that the incoming bundles arrive sequentially at the successive magazines and that in a predetermined magazine a predetermined number of bundle-packet forming bundles belonging to the same series are piled up, and removing said bundle packet from the magazine drum and feeding it to a packing machine, wherein

(a) in a manner known per se all the strip piles belonging to the same pile of sheets are assembled and simultaneously moved forward as a group of contiguous strip piles in the longitudinal direction of the strip piles and delivered to the bundle cutting unit, and the bundles leaving said cutting unit are fed steadily and sequentially onto a conveyor path for delivery to an intermediate storage device,

(b) the number N of magazines is equal to the maximum number ($m_o \times n_o$) of banknotes contained in a single sheet to be processed, m_o denoting the maximum number of rows of banknotes and n_o the maximum number of column of banknotes, and

(c) when m is less than m_o and/or n is less than n_o, after cutting each group of m strip piles, ($n_o - n$) blank cycles are introduced to provide with respect to the next group of strip piles pertaining to the following pile of sheets a gap equal to the measurements of ($n_o - n$) banknotes in the longitudinal direction of the strip pile, and during the subsequent forward delivery of a bundle onto the conveyor path there are introduced into said path and at each sequence m of bundles a number ($m_o - m$) of empty posi-

tions and, on account of the aforesaid blank cycles ($n_o - n$), in addition to the last series of bundles belonging to a pile of sheets, a number $(m_o - m) + (n_o - n)$ m_o of empty positions.

4,453,708

MECHANISM FOR TRANSPORTING AND POSITIONING PRINTING MASTERS

Werner Dennhardt, Bad Kreuznach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

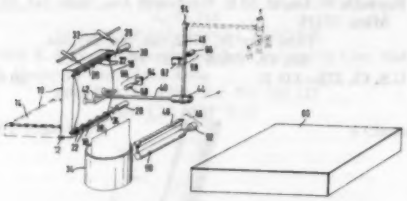
Filed Dec. 2, 1981, Ser. No. 326,476

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1980, 3047178

The portion of the term of this patent subsequent to Mar. 1, 2000, has been disclaimed.

Int. Cl.³ B65H *1/02*

U.S. Cl. 271—8 A **14 Claims**



1. A mechanism for positioning and transporting printing masters from a plate holder means to an exposure table means in a processing unit, said mechanism comprising;

means for holding a supply of plates, said holding means being pivotable to a vertical position;

roller guide means abutting said holding means when said holding means is in said vertical position;

suction means for grasping the foremost plate of a supply of plates in said holding means, said suction means being horizontally displaceable in order to transport a grasped printing plate along a transport path;

means disposed below said transport path for gripping a printing plate; and

a pair of opposed positioning means disposed above said gripping means for positioning and maintaining a printing plate in a predetermined position, at least one of said positioning means being laterally displaceable toward the other of said positioning means.

4,453,709

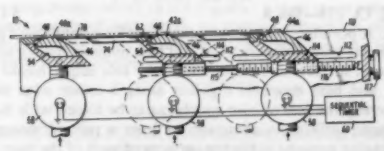
SYSTEM FOR SERIALLY CONVEYING DISCRETE FLEXIBLE ARTICLES

Imants Reba, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed May 7, 1982, Ser. No. 375,793

Int. Cl.³ B65H *29/24*

U.S. Cl. 271—195 **15 Claims**



1. Apparatus for serially conveying discrete flexible articles along a flow path between a first station and a second station comprising, in combination:

a plurality of Coanda nozzles positioned along said flow path, said nozzles including a body member defining a generally smoothly curved Coanda fluid flow attachment surface, a slit defining element defining a first elongated slit with the Coanda fluid flow attachment surface, said first elongated slit being substantially straight and extending in a direction generally perpendicular to said flow path, and at least one of said nozzles including a cover element spaced from said first elongated slit and defining a cover surface directed toward said Coanda fluid flow attachment surface and for maintaining a predetermined distance between said articles and said first elongated slit; and

article support means extending between at least some of said Coanda nozzles defining spaced generally flat support surfaces leading from said Coanda fluid flow attachment surfaces toward cover surfaces of adjacent Coanda nozzles and additionally defining a plurality of apertures between said support surfaces and in communication therewith and with said Coanda fluid flow attachment surfaces, said nozzles and said article support means cooperable to separate air flow induced by at least one of said nozzles into a laminar fluid flow component directed along said support surfaces toward said second station to propel said articles therealong and exert a suction force thereon in a direction substantially normal to said flow path and a vented fluid flow component directed through said apertures to prevent the build-up of air disturbances that would otherwise be imparted to the articles during conveyance thereof.

4,453,710

DUMBBELL

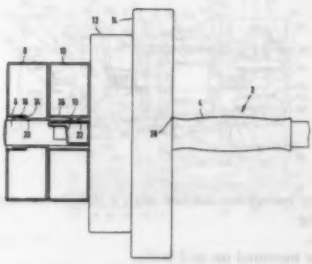
Eberhard Plötz, Vinnhorster Weg 43, D-3000 Hannover 21, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,367

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 8111724[U]

Int. Cl.³ A63B *11/00*

U.S. Cl. 272—122 **4 Claims**



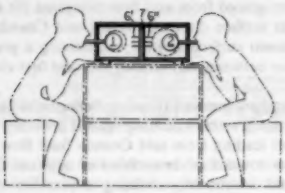
1. An improved dumbbell having a grip bar with two ends and a plurality of wheel weights mountable at each end thereof, the improvement in combination therewith comprising said grip bar having on each end a plurality of locking tabs, each of said wheel weights having an axial bore, each said axial bore including at least one axially extending channel and at least one complementary stop, said channel extending through the entire axial bore of each said wheel weight to provide an unimpeded passageway for the receipt and passage of said locking tabs such that each said wheel weight can pass over said locking tabs, each of said locking tabs being engageable with at least one of said complementary stops upon rotation of said wheel weight relative to said grip bar.

4,453,711

INFLATABLE BODY BREAKING GAME

Abram Gin, 99-46 63rd, Rego Park, N.Y. 11374

Filed Feb. 16, 1982, Ser. No. 348,834
Int. Cl.³ A63F 9/00
U.S. Cl. 273—86 R 9 Claims



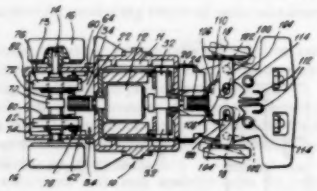
1. A game, comprising
at least two inflatable bodies;
a supporting element arranged to support said two inflatable bodies;
a breaking element, said inflatable bodies being arranged at a predetermined distance from said breaking element in non-inflated condition; and
means for inflating said inflatable bodies by at least two players, respectively, so that during inflation of said inflatable bodies by the players said inflatable bodies expand, overcome said distance, and break being pierced by said breaking element and therefore each of said inflatable bodies is broken as a result of its inflation by the respective player and finally piercing by said breaking element.

4,453,712

DRIVE SYSTEM FOR TOY CARS

Cheuk-Ming Lee, Hong Kong, Hong Kong, assignor to The Refined Industry Company Limited, Hong Kong, Hong Kong

Filed Jul. 21, 1982, Ser. No. 400,321
Claims priority, application United Kingdom, Jul. 27, 1981, 8123130
Int. Cl.³ A63F 9/14; A63H 17/36
U.S. Cl. 273—86 B 11 Claims



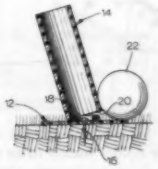
1. A toy racing car for use with a slotless car racing track comprising:
a body,
a motor mounted on said body,
drive wheels driven by said motor,
drive means to transfer a drive taken from said motor to drive the car in the forward driving direction irrespective of the direction of rotation of said electric motor,
wherein said drive means comprises:
a drive pinion rotated by said motor,
a slide mounted transversely of the axis of rotation of said drive pinion and slidable between limit positions in the transverse direction relatively to the axis of rotation of said drive pinion,
a tooth upstanding from said slide and capable of engagement with said drive pinion for moving said slide from one limit position to the other according to the direction of rotation of said pinion,
a pair of crown gears slidable longitudinally of the axis of rotation of said drive wheels and parallel to the direction of movement of said slide,
flanges forming part of said crown gears which project into respective recesses in said slide, whereby movement of said slide from one limit position to the other moves said crown gears longitudinally of the axis of rotation of said drive wheels and parallel to the direction of movement of said slide, so that in one limit position of said slide the output pinion meshes with one crown gear to drive the car in the forward direction and when said slide is moved to the other limit position upon reversal of the direction of rotation of said drive pinion, the other crown gear meshes with said drive pinion to continue to drive the car in the forward direction despite the change in direction of rotation of said motor.

4,453,713

LAWN GAME WITH VERTICALLY SLIDABLE TARGETS

Reynolds W. Guyer, 33 E. Wentworth Ave., Suite 345, St. Paul, Minn. 55118

Filed May 24, 1982, Ser. No. 381,384
Int. Cl.³ A63B 71/02, 59/00, 63/00
U.S. Cl. 273—118 R 20 Claims



1. A game apparatus comprising:
a plurality of generally upright targets, each target having a base and an elongated upright, the base being positioned on a playing surface, and the upright being formed to be vertically slidably retained in a generally vertical position on an upwardly extending portion on the base, the coacting sliding portions being of sufficient extent to keep the upright in the generally vertical position against such tipping forces as the wind and those resulting from vibration but sufficiently short to allow tipping of the upright away from the base when the upright is hit with sufficient force;
a plurality of balls; and
a mallet for striking the balls to selectively advance each ball across the playing surfaces and into contact with selected uprights with sufficient force to tip each upright by causing it to slide off of its base.

4,453,714

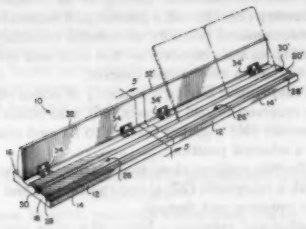
BINGO GAME SUPPORT KIT

Bernard R. Houser, 1011 Isabella Dr., Stafford, Va. 22554

Filed Sep. 2, 1982, Ser. No. 414,058
Int. Cl.³ A63F 3/06
U.S. Cl. 273—148 A 3 Claims

1. A portable, foldable bingo support kit comprising a pair of elongate base members, each said base member having top and bottom surfaces and major and minor side edges, means hinging said base members together along a minor edge thereof whereby the pair of base members can be folded with the said bottom surfaces in abutment, at least a pair of bingo card engaging grooves in the top surfaces of each of the base members with the grooves running parallel to the major side edges, a pair of elongate card support members, each of said card support members having a length substantially equal in length to said base members and having a width not greater than the width of the minor side edges of the base members, hinge

means connecting the pair of card support members one to each said top of the base members and along one of the major



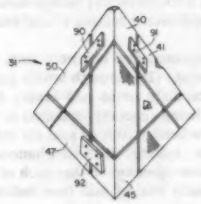
said edges whereby the card support members can be folded to lie on the top surface of base member to which it is hinged.

4,453,715

THREE-DIMENSIONAL PUZZLE

Benjamin R. Halpern, Bloomington, Ind., assignor to Uwe Meffert, Causeway Bay, Hong Kong

Filed Sep. 17, 1981, Ser. No. 303,127
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **4 Claims**



1. A puzzle having a polyhedron shaped body, said puzzle comprising:

a central connecting component having more than 3 mounting means coupled to said central connecting component and outwardly extending therefrom,

a plurality of face components, each of said face components being rotatably mounted on a different one of said mounting means,

a plurality of edge components, having lug means thereon, the lug means of each edge component being engaged by inwardly facing surfaces of two face components holding said edge component at a predetermined distance from said central connecting component,

a plurality of vertex components having lug means thereon, the lug means of each vertex component being engaged by inwardly facing surfaces on three of said edge components and three of said face components holding said vertex component at a predetermined distance from the central connecting component, and

fastening means which fasten together one or more pairs of components of said puzzle to prevent movement of selected components relative to each other to create additional puzzle challenges.

4,453,716

TRANSVERSE FORCE INDICATING DEVICE FOR SWING TEACHING

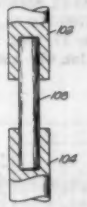
Jess Oppenheimer, 549 Moreno Ave., Los Angeles, Calif. 90049

Filed Oct. 23, 1981, Ser. No. 314,147
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A **2 Claims**

1. A transverse force indicating apparatus for indicating to a user the magnitude of transverse force exerted during the swinging of a first object, such as a golf club, prior to hitting a second object, such as a ball, comprising:

a shaft having a first part with a gripping means on one end of the first part and a second part with means for contacting the second object attached to one end of the second part, the means for contacting defining a weight concentration;

a shear member interconnecting the other end of the first



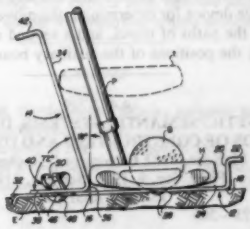
part and the second part in normally coaxial alignment whereby the second part moves out of coaxial alignment only when the transverse forces exerted against the second part as a sole consequence of swinging the first object prior to hitting the second object are greater than the transverse forces exerted against the first part by a predefined magnitude of force sufficient to cause the shear member to break enabling the second part to move in any noncoaxial direction relative to the first part upon failure of the shear member.

4,453,717

PUTTING PRACTICE DEVICE

Karsten Solheim, Phoenix, Ariz., and N. Eugene Cotchonis, Sherman Oaks, Calif., assignors to Karsten Manufacturing Corp., Phoenix, Ariz.

Filed Sep. 13, 1982, Ser. No. 417,408
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—192 **9 Claims**



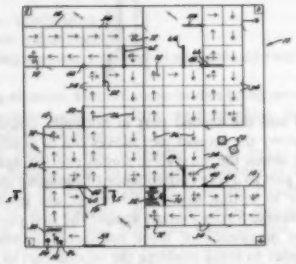
1. Apparatus for practicing golf putting strokes comprising in combination:

(a) a putting surface member of elongated planar configuration defining a golf ball receiving area and indicating the intended travel path of a golf ball to be putted, said putting surface member having an opposed pair of longitudinal edges; and

(b) a swing path defining member including an elongated unobstructed planar surface member and a flange of integral one piece construction which extends angularly from one of the longitudinal edges of said unobstructed planar surface member to form a fixed included angle of substantially 72°, said flange being mounted contiguously on said putting surface member to support said unobstructed planar surface member in a natural putter swing plane of

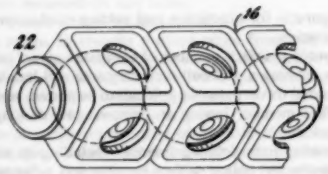
substantially 72° with respect to said putting surface member, said flange being adjacent one of the longitudinal edges of said putting surface member to laterally space said unobstructed planar surface member out of the intended natural swing path of a putter to be used so that said unobstructed planar surface member will serve as a disengaged visual indication of the intended natural swing path of a putter to be used.

4,453,718
SWIVEL SWITCH GAME
Dale Christoperson, 1700-31st St., Kenosha, Wis. 53140
Filed May 17, 1982, Ser. No. 379,181
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—249 **5 Claims**



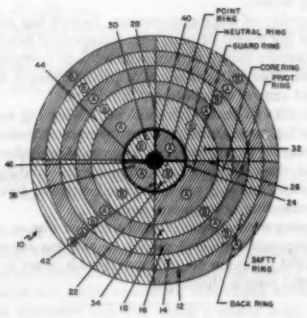
2. A chance game including a game board having four corners and a number of paths of travel thereon, an auxiliary board having one edge connected to one of the corners of the game board for pivotal movement between a first position having one portion of the edge of said auxiliary board located along one edge of said game board and a second position having a second portion of the edge of said auxiliary board located along a different edge of said game board, each of said auxiliary boards having paths of travel defining diverse paths of travel when aligned with the paths of travel on said game board, a number of game pieces adapted to be moved along the paths of travel on said game board and said auxiliary boards, a first chance device for determining the movement of the game pieces on the paths of travel, and a second chance device for determing the positions of the auxiliary boards.

4,453,719
PHONETIC/SEMANTIC SYSTEMS, DEVICES AND METHODS OF CONSTRUCTING AND UTILIZING SAME
James H. McKean, 1102 Barneswood, Rochester, Mich. 48063
Filed Nov. 9, 1981, Ser. No. 319,458
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—265 **10 Claims**



1. An encoding game device, comprising:
an elongated carrier frame formed of flexible resilient material and comprising a predetermined plurality of compartments interconnected by reduced sections;
said elongated carrier frame having a substantially rectangular cross section;
each said compartment having in its interior a spherical chamber (**26, 28**) and a plurality of recesses (**46**);
a predetermined plurality of spheres rotatably mounted in said spherical chambers so that each said spherical chamber contains one of said spheres;
each said sphere having a plurality of nodes (**48**) adapted to be received in said recesses (**46**), said nodes (**48**) and said recesses (**46**) together serving to fix said rotatable sphere in a selected position;
said flexible resilient elongated carrier frame being provided with a receptacle (**22**) at one end thereof and a plug (**24**) at the opposite end thereof;
said plug and receptacle being of mating sizes so that said plug is adapted to be received in a mating receptacle on an adjacent flexible resilient elongated carrier frame whereby a series of flexible resilient elongated carrier frames may be interconnected;
each of said rotatable spheres being provided with six indicia thereon, with three of said six indicia representing a binary digit 0, and the remaining three of said six indicia representing a binary digit 1;
said six indicia being mounted on each said rotatable sphere in raised sections (**40**);
each said indicia representing the binary digit 0 being provided with a smooth indicia background section (**42**), and each said indicia representing said binary digit 1 being provided with a rough indicia background section (**44**), to permit visual and tactile sensing of said binary digits 0 and 1; and
each of said interconnected compartments being provided with four openings (**18**) through which game players may visually and tactilely sense said binary digits, said four openings (**18**) being spacially arranged in their associated compartment whereby four of said six indicia carried by said rotatable sphere are simultaneously displayed through said four openings so that each of said four openings displays only one of said four indicia at any given instant.

4,453,720
FIELD GAME
David G. King, 39 Betsy B Ave., Somerset, Mass. 02725
Filed Aug. 22, 1983, Ser. No. 525,231
Int. Cl.³ A63B *71/02, 37/14*
U.S. Cl. 273—411 **6 Claims**



1. A game involving players of a first and second opposing teams, each attempting to score points by throwing an object to a specified area, said game comprising:
a playing field having a plurality of concentric circles intersected by perpendicular lines through the center thereof forming a plurality of zones in quarters, the outermost being a safety zone, the next adjacent being a back zone,

the next adjacent being a pivot zone, the next adjacent being a core zone, said outer safety, back, pivot, and core zones being of substantially the same width, the next innermost zone being a guard zone being of approximately twice the width of said outer zone with a point zone ring formed inside of said guard zone, and said players of said opposing teams individually populating said zones alternately on each concentric zone within a quarter and alternately in adjacent quarters.

4,453,721

DUAL ELEMENT SEALS WITH HYDRODYNAMIC SUPPORT

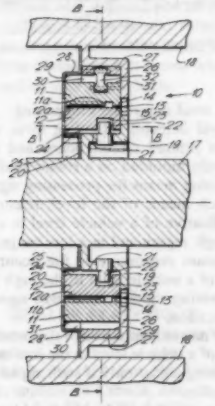
James P. Angus, Penrith, and Jack Palfreyman, Derby, both of England, assignors to Rolls-Royce Limited, London, England

Filed Nov. 16, 1983, Ser. No. 552,369

Claims priority, application United Kingdom, Dec. 14, 1982, 8235545

Int. Cl.³ F16J 15/42, 15/48

U.S. Cl. 277—3 **8 Claims**



1. A seal suitable for sealing between two generally coaxially mounted relatively rotatable members comprising two ring-shaped seal elements having substantially similar rates of thermal expansion which are respectively mounted on said relatively rotatable members so as to be capable of rotation therewith and have confronting radially spaced apart annular sealing forces, each of said relatively rotatable members being provided with annular retaining means to axially retain said seal elements and provide a seal between each of said seal elements and the member to which it is attached whilst permitting a limited degree of relative radial movement therebetween, one of said seal elements being retained on its respective member in such a manner that they are maintained in fixed coaxial relationship, the other of said seal milar rates of thermal expansion which are respectively mounted on said relatively rotatable members so as to be capable of rotation therewith and have confronting radially spaced apart annular sealing forces, each of said relatively rotatable members being provided with annular retaining means to axially retain said seal elements and provide a seal between each of said seal elements and the member to which it is attached whilst permitting a limited degree of relative radial movement therebetween, one of said seal elements being retained on its respective member in such a manner that they are maintained in fixed coaxial relationship, the other of said seal elements being retained on its respective member in such a manner that they are permitted to move out of coaxial relationship, said seal elements having confronting radially spaced apart annular portions which are so configured that upon the relative rotation of said relatively rotatable members, they define a hydrodynamic gas bearing, the operation of which is such that said seal element which is permitted to move out of coaxial relationship with its respective member is hydrodynamically supported by the remaining seal element in such a manner that said seal elements are maintained in coaxial relationship.

4,453,722

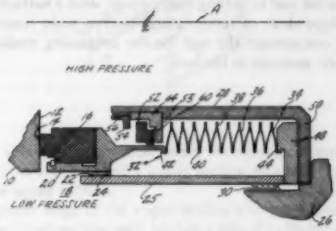
SEAL MEANS

John E. Swanson, Avon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1982, Ser. No. 451,634

Int. Cl.³ F16J 15/36

U.S. Cl. 277—89 **3 Claims**



1. Sealing means for a bearing compartment of a twin spool gas turbine engine having a seal plate rotating at a first speed, an annularly shaped carbon seal having a face bearing against said seal plate in sealing relationship and rotating at a second speed relative to said first speed, an annular support means carrying said carbon seal, an annular member concentrically mounted relative to each other and said second annular member having an anti-rotational tab connected to said annular support means allowing axial movement, said first and second annular members defining an annular cavity, a bellows disposed in said cavity having one end bearing against said annular support means to load said carbon seal against said seal plate, a back-up seal disposed between said carbon seal and said bellows and being generally juxtaposed relative to said carbon seal so as to be in the balance diameter thereof and attachment means for connecting said carbon seal, bellows and back-up seal to one of said spools for imparting rotary motion thereto.

4,453,723

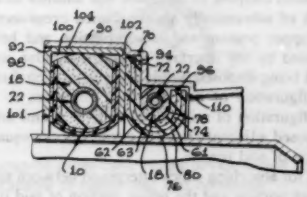
SEAL

Fred A. Greenwald, Battleground, Wash., assignor to General Connectors Corp., Burbank, Calif.

Continuation-in-part of Ser. No. 212,028, Dec. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 181,411, Aug. 26, 1980, abandoned. This application Jun. 4, 1982, Ser. No. 385,333

Int. Cl.³ F16J 15/32

U.S. Cl. 277—164 **3 Claims**



1. A ring-shaped seal of the class described, said seal having an inner surface, said inner surface formed from an elstomer impregnated fabric and comprising a work-engaging surface

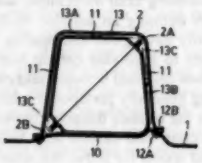
adapted to make a sealing engagement with a surface on a duct, said seal further including a generally tubular ring-shaped insert mounted on the seal so it engages the surface of said fabric opposite said work-engaging surface, said insert being formed from a resilient material, a ring-shaped spring movably mounted inside the bore of said tubular ring-shaped insert with the spring surrounded by and engaging the inner walls of the tubular insert, and in such a way that the coils of the spring are not bonded to and do not adhere to the walls of the bore of the tubular insert, and so the walls of the tubular insert are between the spring and the said opposite surface of said elstomer impregnated fabric to hold said spring away from said fabric to prolong the life of the seal, and said spring sized so that when the seal is in work-engaging contact with a duct, said spring maintains the seal in sealing engagement with a surface on the duct, independent of temperature, over a wide temperature range to compensate the seal for the decreasing resilience of elastomeric material in the seal.

4,453,724

FUEL TANK CONSTRUCTION OF MOTOR VEHICLE

Hiroyuki Watanabe, and Yasushi Tanaka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 27, 1982, Ser. No. 382,552
Claims priority, application Japan, Jun. 12, 1981, 56-90276
Int. Cl.³ B60K *15/02*
U.S. Cl. 280—5 A **4 Claims**



1. A motor vehicle fuel tank structure comprising:

a motor vehicle floor panel having a width and length and normally positioned such that the length of said floor panel extends along a length of a motor vehicle, said floor panel including a tunnel projecting upwardly from said floor panel to form an upper portion and opening downwardly while extending along the length of said floor panel at a position central to the width of said floor panel;

a fuel tank having first and second triangularly-shaped cross-sections coupled to interface one another to form a fuel tank of substantially square-shaped cross-section having an upper portion and lower portion and having seams formed by the interface of said triangular sections, said tank being disposed within said tunnel such that the square configuration of the fuel tank conforms to the square configuration of said tunnel and the seams are generally disposed adjacent diagonal corners of the square configuration of said tunnel;

means for absorbing shock interposed between said fuel tank upper portion and the upper portion of said tunnel; and

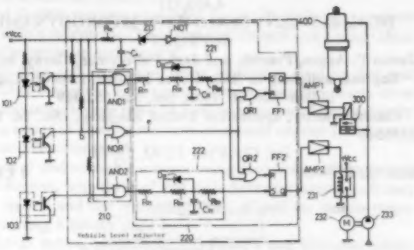
means forming bands for supporting the bottom portion of said fuel tank for retaining said fuel tank in said tunnel and urging said fuel tank upper portion against the interposed shock absorbing material.

4,453,725

ROAD VEHICLE LEVEL CONTROLLER

Kazutaka Kuwana; Masahiro Ueda, both of Toyota, and Seiji Nonoyama, Kariya, all of Japan, assignors to Seiki Kabushikikaisha and Toyota Jidosha Kogyo Kabushikikaisha, both of Toyota, Japan

Filed Jan. 5, 1982, Ser. No. 337,201
Claims priority, application Japan, Jan. 30, 1981, 56-12772
Int. Cl.³ B60G *17/00*
U.S. Cl. 280—6 R **18 Claims**



1. A vehicle level controller comprising

a vehicle level detector including three switch means secured to a printed circuit board and switch operating means fixedly mounted on a rotary shaft;

signal processing means for processing signals fed from the three switch means of the level detector to form three signals indicative of a vehicle level in a high range, in a medium high region and in a low range, respectively;

first delay means responsive to the occurrence of a signal indicative of a vehicle level in the high range to produce a level lowering signal only if such signal continues over a given duration;

second delay means responsive to the occurrence of a signal indicative of a vehicle level in the low range to produce a level lowering signal only if such signal continues over a given duration;

a first flipflop which is set by the level lowering signal and which is reset by a signal indicative of a vehicle level in the medium high region;

and a second flipflop which is set by the level raising signal and which is reset by a signal indicative of a vehicle level in the medium high region.

4,453,726

ROLLER SKATE OR THE LIKE WITH BRAKE ATTACHMENT

Gerd W. Ziegler, Heiligenhaus, Fed. Rep. of Germany, assignor to TSH-Handels AG, Vaduz, Liechtenstein

Filed Apr. 3, 1981, Ser. No. 250,670
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017762; Oct. 31, 1980, 3041042
Int. Cl.³ A63C *17/14*
U.S. Cl. 280—11.2 **16 Claims**

1. In a wheeled skating device having at least one front wheel and a pair of rear wheels journaled on a transverse axle, the combination therewith of:

a truck member between said rear wheels supporting said axle;

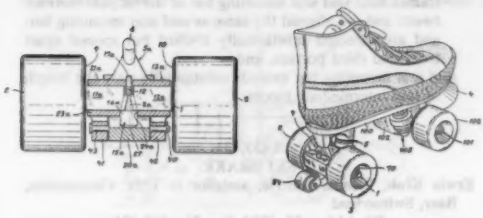
a bracket fulcrumed on said truck member for limited swinging about a pivotal axis extending rearwardly of said axle in a direction perpendicular to said rear wheels, said bracket having a pair of flexible lateral arms with front extremities carrying wedge-shaped formations and extending between said rear wheels;

a roller journaled on a tail end of said bracket rearwardly of said axle;

resilient means tending to maintain said bracket in a limiting

position relative to said truck member in which said roller is elevated above a road surface contacted by all said wheels; and

an upwardly converging extension on said truck member straddled by and coacting with said wedge-shaped formations for driving said front extremities into frictional engagement with said rear wheels upon an elevation of said front wheel sufficient to lower said roller onto the road surface and to swing said bracket about said pivotal axis against the force of said resilient means whereby a braking force is exerted on said rear wheels.

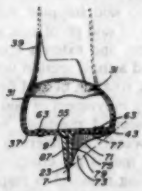


4,453,727

GOALER SKATE BOOT

Rene Bourque, Duvernay, Canada, assignor to Warrington Inc., Montreal, Canada

Filed Feb. 26, 1982, Ser. No. 352,555
Claims priority, application Canada, Jan. 29, 1982, 395252
Int. Cl.³ A63C *1/02*
U.S. Cl. 280—11.12 **11 Claims**



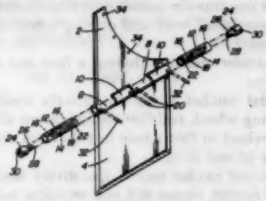
1. A molded base for use in a goal-tender's ice skate, the base having skate blade support means and foot protection means, a sole integral with said skate blade support means and said foot protection means, the base having an inside and an outside portion, the skate blade support means mounting a blade having flat side walls and an upper portion thereof fixedly connected in the blade support means, the blade support means being asymmetric relative to a plane parallel to the blade and running through a longitudinal axis of the blade; space reducing means comprising filler material integral with the blade support means at the outside portion of the base to reduce the space between the sole and the blade to more effectively block shots against a goal post, and the blade support means on the inside of the asymmetric base comprises a flat planar surface parallel to said plane passing through the axis of the blade to present a surface which is more effective for controlling rebounds.

4,453,728

SPLASH GUARD

Cyril A. Verge, Halifax, Canada, assignor to Louis Arthur Verge, Fall River, Canada

Filed Jul. 12, 1982, Ser. No. 397,193
Claims priority, application Canada, Jul. 29, 1981, 382810
Int. Cl.³ B62B *9/16*
U.S. Cl. 280—154.5 R **7 Claims**



1. A splash guard or mud guard for vehicles comprising

an upper section, and a lower section pivotally secured to the upper section,

the lower edge of the upper section and the upper edge of the lower section each having a pair of cylindrical hollow hinge barrels, the hinge barrels of one section interfitting with the hinge barrels of the other section to provide an axial opening therethrough,

and a pair of axially aligned hollow cylindrical sleeves positioned within the axial opening with each sleeve extending from a hinge barrel of one section into an adjacently positioned hinge barrel of the other section, with the inner ends of the cylindrical sleeves being secured against rotation within inner hinge barrels of opposite sections, thereby pivotally securing the upper and lower sections together,

and one of a pair of oppositely wound helical springs positioned in each cylindrical sleeve with the inner end of each sleeve being secured against rotation within its respective sleeve, and with the outer ends of the springs being secured against rotation within outer hinge barrels of opposite sections,

and means to adjust the tension of the springs.

4,453,729

OCCUPANT PROPELLABLE WHEELCHAIR

Wesley O. Lucken, 1149 S. Chantilly, Anaheim, Calif. 92806

Filed Sep. 20, 1982, Ser. No. 420,034
Int. Cl.³ B62M *1/16*
U.S. Cl. 280—242 WC **9 Claims**

1. An occupant propellable riding device which comprises:

a frame capable of supporting said occupant;

a plurality of wheels rotatably mounted on said frame;

at least one of said wheels comprising a driving wheel;

at least one movable means on said frame, at least a portion of said movable means reciprocally movable back and forth away from and towards the occupant from a neutral

position towards said occupant to a displaced position positioned away from said occupant, said movable means movable in a power stroke wherein said movable means moves in the direction away from said neutral position and said occupant towards said displaced position and said movable means movable in a return stroke wherein said movable means moves in the direction from said displaced position back towards said neutral position and said occupant;

at least one transfer means rotatably mounted on said frame in association with said driving wheel and said movable means;

said transfer means including a first and a second ratchet means;

said first ratchet means operatively associated with said driving wheel, said first racthet means allowing said driving wheel to free wheel in a forward direction of movement of said device;

said second ratchet means operatively associated with said first ratchet means and said movable means, said second ratchet means allowing said driving wheel to free wheel in both said forward direction and the reverse direction when said movable means is in said neutral position and said second ratchet means, acting through said first ratchet means by engaging with said first ratching means rotating said driving wheel in said forward direction in response to said movable means moving in said power stroke and said second ratchet means disengaging with said first ratchet means when said movable means moves in said return stroke.

4,453,730

BICYCLE FRAME

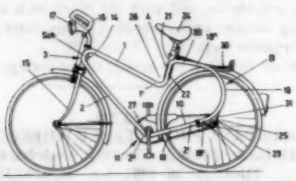
Odo Klose, Am Freudenberg 19, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Nov. 18, 1981, Ser. No. 322,338

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043931; European Pat. Off., Oct. 31, 1981, 81109470.5

Int. Cl.³ B62K *3/04*

U.S. Cl. 280—281 R **13 Claims**



1. A bicycle frame comprising

two congruent individual frames connected with each other and disposed at a distance from each other,

each of said individual frames including:

an upper frame arm extending, from a first portion thereof adapted for a steering fork head of a bicycle, in rearward downward direction to a second portion thereof adapted for a seat mount of the bicycle;

a lower frame arm extending from the first portion in a downward direction to a third portion thereof adapted for a pedal bracket of the bicycle, said lower frame arm from the third portion continues into a backwardly rising bend of the lower frame arm;

said bend together with said lower frame arm forms an obtuse V frame section;

a rearward end zone of said bend of said lower frame arm forms a fourth portion thereof adapted for a rear wheel axle receiver of the bicycle and extends into an upwardly rising section, the latter extending into the region of the second portion for the seat mount;

said rearward end zone of said bend extends into said upwardly rising section forming a bow, the latter having a rearwardly directed apex; and

an intermediate piece rigidly connects said upwardly rising section in the region of the second portion with said upper frame arm;

a seat mounting bar,

said intermediate pieces of said two congruent individual frames hold said seat mounting bar of the bicycle therebetween and are aligned the same as said seat mounting bar, and are directed substantially toward but spaced apart from said third portion, and

said seat mounting bar extends substantially only the length of said intermediate pieces.

4,453,731

SKI BRAKE

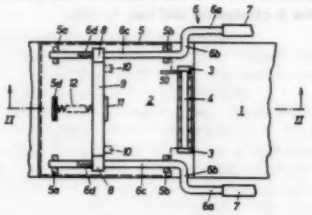
Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Mar. 25, 1982, Ser. No. 362,174

Claims priority, application Austria, Mar. 27, 1981, 1459/81; Apr. 16, 1981, 1760/81; Apr. 16, 1981, 1762/81

Int. Cl.³ A63C *7/10*

U.S. Cl. 280—605 **14 Claims**



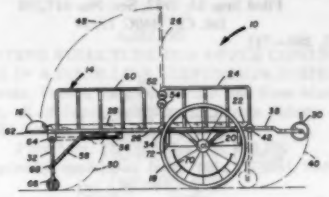
1. In a ski brake mountable on a ski, including: a base plate which is adapted to be secured to the ski; a stepping member supported on said base plate for pivotal movement about a pivot axis between a braking position and a retracted position; erecting means yieldably urging said stepping member toward said braking position; a braking mandrel having a first section which is rotatably supported on and fixed against axial movement with respect to said stepping member and extends approximately radially of said pivot axis, a second section which is radially offset from and extends approximately parallel to said first section, and a third section which connects said first and second sections, rotation of said first section of said braking mandrel effecting movement of said second section thereof between first and second positions which are respectively spaced laterally outwardly and laterally inwardly of a side wall of the ski; and first means for effecting rotation of said first section of said braking mandrel in response to pivotal movement of said stepping member so that said second section of said braking mandrel is respectively in its first and second position when said stepping member is in said braking and retracted positions; the improvement comprising wherein said first means includes: a control part supported on said stepping member for movement axially of said first section of said braking arm between first and second positions; second means for effecting movement of said control part between its first and second positions in response to movement of said stepping member between said braking and retracted positions, respectively; means defining a coarse helical thread on one of said control part and said first section of said braking mandrel; and third means on the other of said control part and first section of said braking mandrel cooperable with said coarse helical thread for effecting rotation of said first section of said braking arm in response to movement of said control part so that said second section of said braking arm is respectively in its first and second positions when said control part is in its first and second positions.

4,453,732

PATIENT TRANSPORT AND CARE VEHICLE

Albert A. Assanah, 3407 Wild Cherry Rd., Baltimore, Md. 21207; Fitzroy Assanah, and George G. Assanah, both of 3526 Overview Rd., Baltimore, Md. 21215

Filed Dec. 24, 1981, Ser. No. 334,233
Int. Cl.³ A47C 13/00
U.S. Cl. 280—648 6 Claims



1. A patient transport and care vehicle, comprising:

a wheelchair structure, said wheelchair structure having a base frame, a pair of wheels, a foot rest member, a pair of casters, a pair of armrest members, a back frame, and a plurality of releasable detent locking means, said base frame having a first end and a second end and a left side and a right side, said pair of wheels being rotatably affixed to said base frame, said pair of wheels resting on and interfacing with the floor, said pair of wheels being located one on said left side of said base frame and one on said right side of said base frame, said foot rest member being rotatably affixed to said first end of said base frame, said pair of casters being swivally affixed to said foot rest member opposite to said point where said foot rest member is rotatably affixed to said base frame, said pair of casters interfacing with said floor, said pair of arm rest members being located and rigidly affixed to said left and right sides, respectively, of said base frame, said back frame having a first end and a second end and a left side and a right side, said first end of said back frame being hingeably affixed to said second end of said base frame, said back frame defining a pocket-like aperture therewithin, said pocket-like aperture being located in the outboard portion of said second end of said back frame, a first portion of said detent locking means being affixed to each said arm rest member to releasably connect and lock to said left and right sides, respectively, of said back frame, a second portion of said detent locking means being similarly affixed to each said arm rest member to releasably connect and lock to said left and right sides, respectively, of said back frame, said second portion of said detent locking means serving as a safety lock, a third portion of said detent locking means being similarly affixed to each said arm rest member to releasably connect and lock to said rotatably foot rest member;

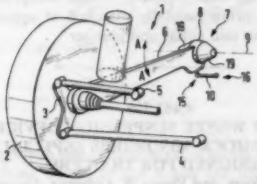
a mobile stretcher structure, said mobile stretcher structure being a partial conversion of said wheelchair structure, said mobile stretcher structure utilizing said back frame hingeably affixed to said second end of said base frame, when in a horizontal position, and said foot rest member when in a horizontal position; said mobile stretcher structure having a collapsible support member, a brace means, a support wheel; and a pair of side guard members, said collapsible support member being pivotably affixed at said second end of the rearmost side of said back frame, said brace means being pivotably affixed at one end to said collapsible support member and pivotably affixed at the opposite ends to the left and right sides, respectively, of the rearmost side of said back frame, said pivotably affixed ends of said collapsible support member affixed to said left and right sides of said back frame being of a locking index configuration, said support wheel being affixed to the distal end of said collapsible support member and interfacing with said floor, said side guard members being removably affixed to said left and right sides, respectively, of said back frame, said side guard members being suitably stored under said base frame when not in use.

4,453,733

SUSPENSION SYSTEM WITH CONTROL FOR THE TOE-IN OF NON-STEERED WHEELS

Wolfgang Sautter, Grafelfing, and Rudolf Muller, Dachau, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,565
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043092
Int. Cl.³ B62D 17/00
U.S. Cl. 280—661 12 Claims



1. A single-wheel suspension for non-steered wheels of motor vehicles, especially passenger vehicles, which during the spring action have a change of camber, with said single-wheel suspension having a wheel support which, in the transverse direction of the vehicle in the area of the wheel axle, via a camber-changing transverse guidance, in the longitudinal direction of the vehicle, via a torsion-proof longitudinal arm, is movably connected with the body of the vehicle, and where an auxiliary device is applied at the longitudinal arm, at a distance from the pivot bearing of the longitudinal arm on the side of the vehicle body, in such a way that the longitudinal arm, during the bending and unbending of the wheel springs, is forcibly dislocated in the pivot bearing approximately in the transverse direction of the vehicle for the purpose of influencing the toe-in, characterized in that the auxiliary device, in the area of the pivot bearing at a vertical distance from the swivel axis, is movably connected with the longitudinal arm in such a way that the longitudinal arm, during the bending and unbending of the springs for the wheel, by means of the camber-changing transverse guidance in the movable connection, is tilted relative to the swivel axis by means of the auxiliary device.

4,453,734

STEERABLE WHEEL SUSPENSION ASSEMBLY

James R. McGhie, 35 Ivybridge Dr., Brampton, Ontario, Canada, and Semyon I. Fishgal, 1908-35 High Park Ave., Toronto, Ontario, Canada M6P 2R6

Filed May 17, 1982, Ser. No. 378,613
Int. Cl.³ B60G 9/02, 17/00
U.S. Cl. 280—662 5 Claims

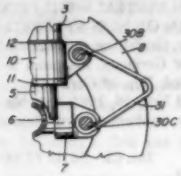
1. A steerable suspension assembly for a vehicle comprising:

(a) a fluid pressure cylinder adapted to be secured to a rigid frame portion of a vehicle and project downwardly therefrom, said cylinder when projecting downwardly having an open lower end,

(b) a plunger projecting into said cylinder in sealing relation through said open lower end of the cylinder and extending therebelow, said latter portion of the plunger being adapted to be connected to one or more wheels for rolling on the ground, said plunger and cylinder being arranged co-axially with said plunger being freely rotatable in the cylinder about their common axis,

(c) a collar rotatably mounted on said cylinder and

(d) coupling means interconnecting said collar and plunger causing the same to rotate in unison about said common axis while allowing said plunger to move axially relative



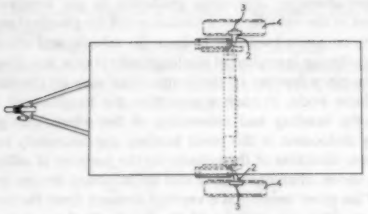
to the cylinder said coupling means comprising a U-shaped leaf spring pivotally attached at opposite ends respectively to said collar and plunger.

4,453,735

INDEPENDENT WHEEL SUSPENSION DEVICE WITH BUILT-IN SHOCK ABSORBERS ESPECIALLY DESIGNED FOR TRAILERS

Albert Penverne, Sagy, and Pierre W. Gobeaux, Gagny, both of France, assignors to F.T.F., Saone et Loire, France

Filed Jun. 1, 1981, Ser. No. 268,552
Claims priority, application France, Jun. 6, 1980, 80 13034
Int. Cl.³ B60G 3/02
U.S. Cl. 280—690 20 Claims



1. A vehicle suspension device for supporting a vehicle frame on a wheel, said vehicle suspension device comprising:

a suspension arm pivotally mounted to said vehicle frame so as to pivot about a first predetermined axis, said wheel being rotatably mounted to said suspension arm so as to rotate relative to said suspension arm about a second predetermined axis parallel to said first predetermined axis and spaced predetermined distance therefrom;

a first link member having a first end and a second end, said first end being pivotally fastened to said vehicle frame so as to pivot about a third predetermined axis parallel to both of said first and second predetermined axes and spaced apart therefrom;

a second link member having a first end and a second end, said first end of said second link member being pivotally fastened to said suspension arm so as to pivot about a fourth predetermined axis parallel to said first, second and third predetermined axes and spaced a predetermined angular amount from the plane of said first and second predetermined axes, and said second end of said second link member being reciprocably interconnected with said second end of said first link member; and

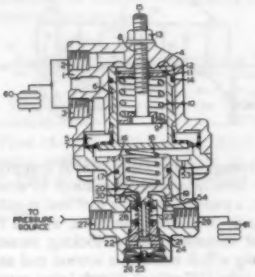
shocks absorbing means interposed between said second end of said first link member and said second end of said second link member so as to absorb reciprocal oscillatory energy between said first and second link members.

4,453,736

CONTROL ARRANGEMENT FOR A PNEUMATICALLY CUSHIONED VEHICLE

Klaus-Dieter Bergemann, Hanover; Bernd-Joachim Kiel, Wunstorf; Heinz-Werner Konig, Barsinghausen, and Karl-Heinz Deike, Pattensen, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeughremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,299
Int. Cl.³ B60G 17/04
U.S. Cl. 280—711 5 Claims



1. A control arrangement for a pneumatically cushioned vehicle having a first and a second pneumatically cushioned axle whereby the pressure in an air spring bellows of the second vehicle axle is controlled in accordance with an air spring bellows of the first vehicle axle, characterized by:

(a) a relay valve,

(b) said relay valve includes a control inlet means connectable to the air spring bellows of the first vehicle axle,

(c) said relay valve includes a pressure inlet means connectable to a source of supply pressure,

(d) said relay valve includes a pressure outlet means connectable to the air spring bellows of the second vehicle axle, and

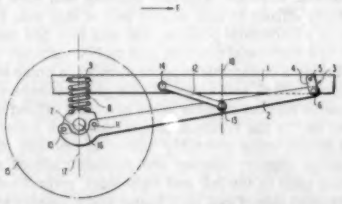
(e) said relay valve maintains the level of the pressure at the pressure outlet means at a minimum value even when little, if any, pressure exists at the control inlet means.

4,453,737

AXLE SUSPENSION FOR MOTOR VEHICLES

Hans Burchard, Lichtenwald, and Rudolf Steinecke, Weinstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,761
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047970
Int. Cl.³ B60G 11/14
U.S. Cl. 280—725 29 Claims



1. An axle suspension for a motor vehicle wherein the axle includes a rigid axle having an axle body, comprising first means for supporting the rigid axle with respect to a body of the vehicle, second means for supporting the axle body including a pair of longitudinally extending link means, means for

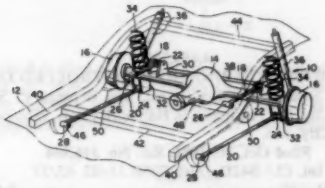
mounting a first end of each of the link means to a portion of the vehicle body so as to enable the respective link means to be displaced in a longitudinal direction, means for connecting a second end of each respective link means to the axle body, rigid control means connecting each respective link means to said vehicle body for controlling a longitudinal displacement of the respective link means, and means for pivotally connecting respective control means to the respective link means.

4,453,738

MOUNTING STRUCTURE FOR UPPER CONTROL ARMS IN A FOUR LINK SUSPENSION SYSTEM

Takeo Murata, Toyota; Sadaitsu Tamura, and Kozo Mori, both of Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 17, 1982, Ser. No. 359,106
Claims priority, application Japan, Jun. 17, 1981, 56-92113
Int. Cl.³ B60G *11/14*
U.S. Cl. 280—725 **9 Claims**



1. In a four link suspension system for a monocoque vehicle body having a floor panel, which comprises a pair of upper control arms and a pair of lower control arms disposed in a longitudinal direction of said body between a rigid axle housing encasing a transversely extending axle shaft and said body and adapated to swingably connect said axle housing to said body, a mounting structure for the upper control arms which comprises a pair of side members extending along both sides of said floor panel in a longitudinal direction of said body and secured to said floor panel, each of said side members having a downwardly extending bracket, and a cross member disposed between said side members with a distance from said floor panel and having ends fixedly secured to a respective one of said downwardly extending brackets, said cross member being provided with a pair of brackets with a distance from each other in a transverse direction of said body, said upper control arms having forward ends which are pivoted to the respective cross member brackets such that vibrations transmitted to said floor panel from said rigid axle housing through said upper control arms are reduced by deflection of said cross member.

4,453,739

TRACTOR OR OTHER MOVING VEHICLE WITH LIMITED ANGLE OF ATTACK ON SLOPES

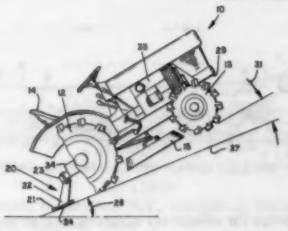
Robert M. Torras, Brunswick, Ga., assignor to Kut-Kwick Corporation, Brunswick, Ga.

Filed Jun. 7, 1982, Ser. No. 385,817
Int. Cl.³ B60R *27/00*
U.S. Cl. 280—755 **5 Claims**

1. In a mowing vehicle having a rear axle, front wheels, and normally having a center of gravity forward of the rear axle at a point which increases the proportion of weight on the front wheels and thereby normally increases the maximum angle of attack at which the vehicle can traverse a sloped surface before tipping back over the rear axle, the method comprising the steps of:

providing weight means on said vehicle in back of said normal center of gravity so as to relocate the center of gravity toward the rear axle at a new center of gravity point aft of said normal center of gravity point, which allows the front wheels of the vehicle to lift when the vehicle reaches a critical angle of attack substantially less than said maximum angle which the normal vehicle otherwise could traverse, thereby allowing the front of the vehicle to lift in a relatively gradual and controlled manner when the vehicle reaches said critical angle of attack, and preventing the vehicle from further travel on the path until the vehicle operator reduces the angle of attack below the critical angle; and

limiting the maximum amount of tipping which the vehicle with said relocated center of gravity is capable of under-



going when said critical angle of attack is reached, so that the front wheels of the vehile can lift no more than a limited amount assuring that propulsion of the vehicle is discontinued until the angle of attack on the slope is reduced below the critical angle,

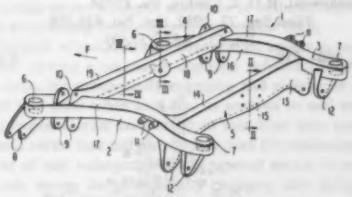
thereby enabling the driver of the vehicle to regain contact at the front wheels by reducing the angle of attack on the slope, and allowing the mowing vehicle to continue along the slope at an angle less than the angle of attack.

4,453,740

AXLE CARRIER FOR MOTOR VEHICLES

Manfred von der Ohe, Stuttgart; Helmut Flemming, Hochdorf; Dirk Siebelt, Weinstadt; Werner König, Stuttgart, and Otto Solleder, Leutenbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 333,992
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048754
Int. Cl.³ B62D *21/00*
U.S. Cl. 280—781 **21 Claims**



1. An axle carrier for a motor vehicle, which is to be mounted onto a vehicle chassis having a pair of spaced side members extending in a longitudinal direction of the vehicle, and a further pair of spaced members extending transversely to the longitudinal direction of the vehicle for connecting the side members to each other, comprising means provided on the respective side members for connecting the axle carrier to wheel guide members of the motor vehicle, and each of the transverse members has a predetermined open profile such that the transverse members are flexible to torsion with respect to a longitudinal axis of the transverse members and resistant to bending in a vertical direction extending transversely to the longitudinal axis of the transverse member.

4,453,741

DEVICE FOR HEIGHT ADJUSTMENT OF A REVERSING MOUNT FOR THE SHOULDER BELT

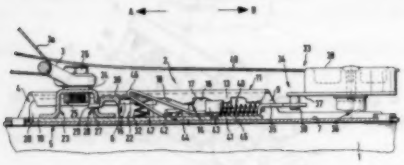
Karl H. Hipp, and Anton Detsch, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,478

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030209

Int. Cl.³ B60R *21/00*

U.S. Cl. 280—801 9 Claims



1. A device for selectively adjusting a reversing mount for a shoulder belt of a restraining system disposed on a vehicle body upward and downward in the vicinity of the shoulder of a passenger, said device comprising a slide guide having discrete latching positions and deflecting ramp means fixedly associated with the vehicle body for receiving an adjusting element, an adjusting element associated with said slide guide and supporting the reversing mount, said adjusting element includes an elastically supported latch means for automatically engaging the latching positions provided on the slide guide and adapted to be automatically brought out of the latching positions by the deflecting ramp means provided on said slide guide when the adjusting element is adjusted upward, and actuating means including a drive means and a slide which is connected with the drive means and is movably guided on said adjusting element relative to the latch means for selectively adjusting the adjusting means upward and downward, said slide including a first driver which engages the adjusting element during an upward adjustment and a second driver having a surface in the form of an inclined plane which engages the latch means when making a downward adjustment to disengage the latch means from the latching positions by relative movement of the slide and adjusting element.

4,453,742

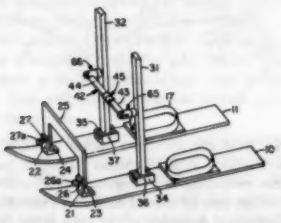
SKI MANEUVERING APPARATUS

John Zepkowski, R.D. 2, Canton, Pa. 17724

Filed Sep. 27, 1982, Ser. No. 424,208

Int. Cl.³ A63C *11/00*

U.S. Cl. 280—818 4 Claims



1. An apparatus for use with a pair of skis, the combination comprising

brace means connected between the front ends of said skis for maintaining a given distance between the connected points while permitting the rear portions of said skis to assume positions whereby the distance therebetween is equal to, greater than or less than said given distance and also permitting said skis to pivot about their longitudinal axes,

means on each of said skis for retaining a foot of one skiing thereon, two vertical poles, each having a ski attachment end and a gripping end, the ski attachment end of each pole being attached to a respective one of said skis at a point between said means for retaining and the point of attachment of said brace means,

linkage rod means for interconnecting said poles,

means for pivotally connecting each end of said linkage rod means to a respective one of said poles, and

rotatable joint means operatively connected to said linkage rod means for enabling one end thereof to rotate axially with respect to the other end thereof, whereby the front tip of one of said skis can assume a position above the front tip of the other of said skis.

4,453,743

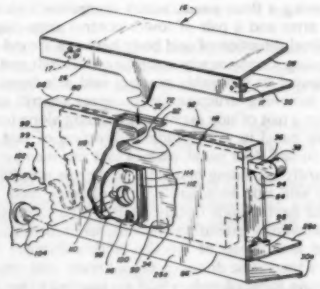
DIARY WITH COMBINATION-CONTROLLED LOCK

Robert E. Sanders, Lenexa, Kans., and Bernard P. Seibolt, Kansas City, Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Oct. 30, 1981, Ser. No. 316,864

Int. Cl.³ B42D *3/10*; E05B *55/02, 65/52*

U.S. Cl. 281—18 6 Claims



1. A selectively securable book-like structure comprising:

a book-like structure having front and back covers spaced to enclose a plurality of pages,

a lock housing,

a first cover clamp for securing the lock housing to one of said covers,

a second cover clamp for securing the lock housing to the second of said covers and having a latch element thereon which is intermateable with said lock housing,

a latching plate disposed within said lock housing and being slidable therein between a latching position and a retracted position, and

combination-controlled means for selectively enabling the latching plate to slide within said housing between said positions,

wherein said combination-controlled means comprises a camming edge on said latching plate and a pair of camming discs axially aligned adjacent said camming edge of the plate, said discs each having a flattened, planar surface portion along a chord line thereof so that when said planar surface portions of said discs are aligned in a common plane adjacent said camming edge of the plate, lateral movement of said plate away from its latching position is enabled.

4,453,744
PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Albert Würmli, and Christel Tempel, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

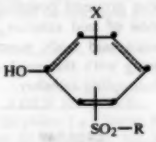
Filed Jun. 7, 1982, Ser. No. 385,595

Claims priority, application Switzerland, Jun. 15, 1981, 3930/81

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 346—216 **12 Claims**

1. A record material for use with a color former in pressure-sensitive or heat-sensitive copy systems, comprising a support having therein or thereon a metal-free color developer of the formula



wherein R is alkyl of 1 to 12 carbon atoms, cycloalkyl, phenyl, benzyl, or phenyl which is substituted by halogen, nitro, methyl, methoxy, ethoxy or methylenedioxy, and X is hydrogen, halogen, carboxyl, lower alkyl or lower alkoxy.

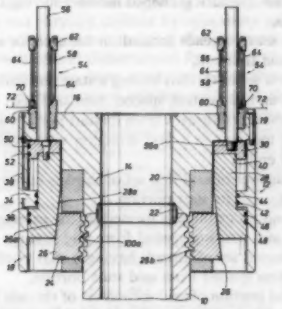
4,453,745
LOCKDOWN MECHANISM FOR WELLHEAD CONNECTOR

Norman A. Nelson, P.O. Box 1473, Houston, Tex. 77001

Continuation-in-part of Ser. No. 293,281, Aug. 17, 1981. This application Sep. 14, 1981, Ser. No. 301,531

Int. Cl.³ F16L *55/00, 39/00, 25/00*

U.S. Cl. 285—18 **19 Claims**



1. A connector for connecting to a subsea wellhead comprising:

a connector body adapted to be connected to a subsea wellhead body in generally coaxial alignment therewith;

latch means carried by said connector body and engageable with said wellhead body to so connect said connector body;

actuator means operatively associated with said latch means and longitudinally extendable for extending said latch means into such engagement with said wellhead body;

a lock assembly, for selectively locking said actuator means in its longitudinally extended position, comprising inner and outer lock means, said outer lock means telescopically receiving said inner lock means with a tight interference fit, said lock means being oriented generally parallel to the path of movement of said actuator means, one of said lock means being connected to said connector body and the other of said lock means being connected to said actuator means, and means for selectively introducing pressurized fluid between said inner and outer lock means to forcibly radially separate said lock means and allow relative telescopic movement therebetween; and

attachment means releasably attaching said one lock means to said connector body, said attachment means comprising detent means having an attaching position and a releasing position with respect to said one lock means, and retainer means engageable with said detent means to retain said detent means in said attaching position.

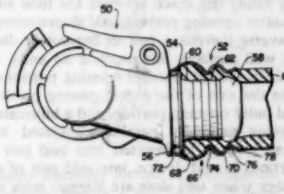
4,453,746
UNIVERSAL FERRULE OR BAND CLAMP HOSE FITTING

John R. Keenan, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Dec. 23, 1980, Ser. No. 220,188

Int. Cl.³ F16L *33/20*

U.S. Cl. 285—256 **10 Claims**



1. In a hose fitting for use with another hose fitting to interconnect two hoses and including a stem to be inserted in the end of a hose and a means to secure the hose to said stem, the improvement being said stem which comprises:

a hose stop means at the proximal end of said stem;

an enlarged, bulbous tapered means at the distal end of said stem;

an annular recess between said hose stop means and said bulbous tapered means having sufficient depth so as to permit secure fitting of said hose to said stem by means of a band clamp concentric to said recess only;

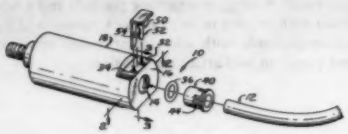
a plurality of radial ridge means spaced axially in said recess and having a maximum diameter sufficient to provide a means for substantially engaging and aiding the securing of said hose when said hose is secured to said stem by a crimped ferrule concentric to said hose stop means and said recess and sufficiently less than the maximum diameter of said enlarged, bulbous tapered means so as to provide means for substantially engaging and aiding in the securing of said hose when said hose is secured to said stem alternatively by said clamp concentric to said recess only; and

a ferrule concentric to said hose and said hose stop means and said recess for securing said hose to said stem, said ferrule having a first bead extending over said hose stop means and adjacent portions of said recess containing more than one of said ridge means, and a second bead extending over at least that part of said enlarged, bulbous tapered means having the greatest diameter and adjacent portions of said recess; the ends of said first bead both having a smaller diameter than said hose stop means and at least one end of said second bead terminates within said annular recess.

4,453,747
CONNECTOR SYSTEM FOR FLEXIBLE TUBING

Charles W. Bimba, 101 E. Main St., Monee, Ill. 60449

Filed Jun. 1, 1982, Ser. No. 383,491
Int. Cl.³ F16L 37/00, 33/00, 21/00, 25/00
U.S. Cl. 285—305 10 Claims

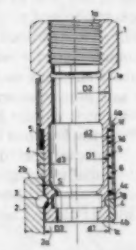


1. A connector assembly for connecting one end of a plastic tube to a port opening in a device with which the tube is in fluid transport relation, said device including a stepped recessed port opening having an inner opening portion sized to receive a short length of said one end of the tube and an outer opening portion having a larger internal diameter, a sealing O-ring positioned in said outer opening portion, said O-ring being adapted to sealingly engage the inner wall of said outer opening portion and the periphery of the tube at a short distance from its inserted end, a cylindrical sleeve member having inner and outer wall surfaces surrounding a portion of the length of the tube axially outwardly from said O-ring and substantially filling the space between the tube and the inner wall of the outer opening portion, said sleeve member having, axially transverse thereto, a pair of oppositely disposed slots through its wall surfaces intermediate its ends, said device having a pair of spaced, parallel opening portions which are transverse to the axis of the outer opening portion and pass through said outer opening portion, and a bifurcated retaining member having generally parallel elongated leg portions which are adapted to be inserted into said pair of parallel opening portions in said device, into said pair of slots in said sleeve member when said slots are aligned with said parallel opening portions, and into compressive contact with opposed sides of a length of tubing mounted in said sleeve member.

4,453,748
QUICK-COUPLING MEMBER

Kjell R. Ekman, Aberenrain 43, 6340 Baar, Switzerland

Filed Jan. 25, 1982, Ser. No. 342,549
Claims priority, application Sweden, Feb. 16, 1981, 8101024
Int. Cl.³ F16L 37/18, 27/00
U.S. Cl. 285—316 20 Claims



1. An improved male quick-coupling member for insertion into and removal from a recess in a unit such as a female quick-coupling member, the recess having an internal diameter, said improved member comprising:

a body member having a front end surface and an exterior body surface extending rearwardly from said front end surface, said exterior body surface being sized to enter the recess in the female quick-coupling member;

a protective sleeve disposed around said body member, said sleeve having an internal diameter in contact with the front portion of said exterior body surface, said sleeve having an external diameter greater than the internal diameter of the recess in the female quick-coupling member, said sleeve being displaceable rearwardly along said body member to expose said front portion of said exterior body surface when said sleeve contacts the portion of the female quick-coupling member surrounding the recess during insertion of said male quick-coupling member into the recess; and

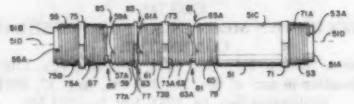
means for biasing said sleeve to an initial position adjacent said front end surface so that said sleeve prevents access of impurities to said front portions of said exterior body surface prior to insertion of said male quick-coupling member into the recess,

whereby said sleeve prevents penetration of impurities via said front portion of said exterior body surface into a clearance between said body member and the recess, without interfering with the quick-coupling function of said male quick-coupling member.

4,453,749
CUT OFF NIPPLES

Robert M. McKinnon, P.O. Box 648, Bedford, Tex. 76021

Filed Jun. 14, 1982, Ser. No. 388,102
Int. Cl.³ F16L 35/00, 15/00, 25/00
U.S. Cl. 285—4 9 Claims



1. A nipple device, comprising:

a hollow cylindrical shaped member having first and second ends,

a first set of threads formed on the exterior of said member at said first end,

said first set of threads having a start portion at said first end and an end portion spaced from said start portion,

said first set of threads from its start portion winding around said member in a first direction when viewed from said first end,

the diameter of said first set of threads tapering from its end portion to its start portion,

a second set of threads formed on the exterior of said member at a position spaced from said first set of threads,

said second set of threads having a start portion and an end portion spaced from said start portion,

said end portion of said second set of threads being closer to said first set of threads than said start portion of said second set of threads,

said second set of threads from its start portion, winding around said member in said first direction when viewed from said second end of said member,

the diameter of said second set of threads tapering from its end portion to its start portion,

a third set of threads formed on the exterior of said member at a position spaced from said second set of threads,

said second set of threads being located between said first and third sets of threads,

said third set of threads having a start portion and an end portion spaced from said start portion,

said start portion of said third set of threads being closer to said second set of threads than said end portion of said third set of threads,

said third set of threads from its start portion winding around said member in said first direction when viewed from said first end of said member,

the diameter of said third set of threads tapering from its end portion to its start portion,

a fourth set of threads formed on the exterior of said member with said third set of threads being located between said second and fourth sets of threads,

said fourth set of threads having a start portion and an end portion spaced from said start portion,

said end portion of said fourth set of threads being closer to said third set of threads than said start portion of said fourth set of threads,

said fourth set of threads from its start portion winding around said member in said first direction when viewed from said second end of said member,

the diameter of said fourth set of threads tapering from its end portion to its start portion,

said member forming a nipple which may be severed at a position between said second and third sets of threads to form two nipples.

4,453,750

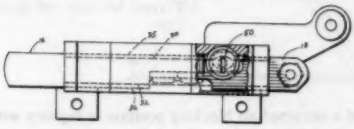
LOCK HOLDER

Vincent Alford, 2350 Bayview La., North Miami, Fla. 33181

Filed Feb. 22, 1982, Ser. No. 351,159

Int. Cl.³ E05C *5/02*

U.S. Cl. 292—66 **8 Claims**



1. A lock holder of the type primarily designed for use with a handle of a removable top structure for automobiles, said lock holder comprising: a body, channel means integrally formed within said body and comprising a substantially elongated slot, said slot partially defined by oppositely positioned, substantially parallel and overhanging flanges, said slot and said flanges structued and dimensioned for sliding disposition on and off the top handle, bore means extending through said body and into communicating relation with said slot, latch means movably mounted within said bore and disposable linearly therein along the longitudinal axis thereof transversely into and out of said slot, and further rotatable within said bore into engaged, latched position with one of said flanges when said latch means is linearly disposed into extended position within said bore through said slot, whereby said latched engagement of said lock assembly relative to said body prevents opening of the top handle in the conventional fashion.

4,453,751

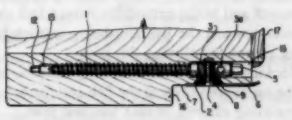
STRIKE PLATE SUPPORT SYSTEM

William J. Hamilton, 1180 Woodroffe Ave., Ottawa, Ontario, Canada (K2C 2T3)

Filed Feb. 16, 1982, Ser. No. 348,948

Int. Cl.³ E05C *13/00*

U.S. Cl. 292—340 **11 Claims**



1. A securing mechanism for a doorjamb strike plate or bolt keeper with holes for securing means, the system comprising:

(a) A pair of similar elongated strike support members, each provided with:

(i) means for being secured within the doorjamb horizontally behind a location where a strike plate or bolt keeper is to be secured and in a plane parallel to that of the body of the strike plate or bolt keeper, and

(ii) threaded aperture means through the longitudinal axis of the member; and

(b) screw means to pass through the holes of the strike plate or bolt keeper and be threadably engaged by the aperture means to secure the strike plate to the strike support members at the location on the doorjamb.

4,453,752

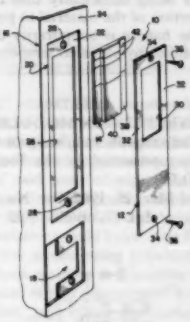
ADAPTER ASSEMBLY FOR DEADBOLT PREPARATION

H. Smith McKann, Fredericksburg, Va., assignor to General Products Company, Incorporated, Fredericksburg, Va.

Filed Apr. 26, 1982, Ser. No. 371,953

Int. Cl.³ E05R *15/02*

U.S. Cl. 292—341.19 **10 Claims**



1. An adapter assembly for use in combination with a door frame of the type having a vertically elongated opening to receive a bolt extending from a lock mounted in a door coupled to the frame, the adapter assembly comprising

an elongated strike plate having an elongated, generally rectangular aperture therein, said aperture being longitudinally offset toward one longitudinal end of said strike plate and completely surrounded by said strike plate;

mounting means, located adjacent longitudinal ends of said strike plate, for coupling said strike plate to the frame such that said strike plate overlies the elongated opening selectively in one of first and second positions, with said first position being inverted relative to said second position in a vertical direction about an axis perpendicular to the plane of said plate; and

adjustable cover means, coupled to said strike plate, for closing at least a portion of said aperture and the opening, said cover means having flanges extending along opposite lateral side edges thereof adapted to underlie portions of said strike plate laterally adjacent said aperture.

4,453,753

HEAT RESPONSIVE DOOR LATCH HANDLE

Peter Fayerman, Douglassville, and Elwood Shaffer, Reading, both of Pa., assignors to Baldwin Hardware Manufacturing Corporation, Reading, Pa.

Filed Jun. 4, 1982, Ser. No. 385,327

Int. Cl.³ E05C *1/16*; E05B *3/00*; E05F *15/20*

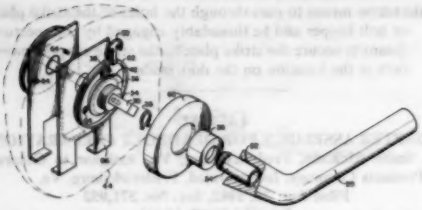
U.S. Cl. 292—348 **13 Claims**

1. A fusibly-linked latch mechanism for controllably securing a door, the latch mechanism having a shaft, the latch mechanism being operable by moving said shaft, said latch mechanism comprising:

a handle having an opening, said handle mounted on the shaft for actuating the latch mechanism; and

a fusible link member disposed within the opening, between

the handle and the shaft, the fusible link member being of a material which melts at an elevated temperature to permit relative movement between the handle and the shaft, the fusible link member contacting the shaft and



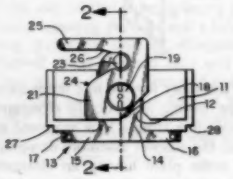
handle, and being sufficiently thin that capillary action retains a portion of the material in position when melted, whereby the handle is temporarily disengaged from the latch mechanism by elevated temperature.

4,453,754

ELECTRONIC PLUG-IN MODULE EXTRACTOR

John R. Kelly, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,330
Int. Cl.³ B65G *7/02*
U.S. Cl. 294—15 **2 Claims**



1. An extractor tool for removing an electronic plug-in module from a chassis comprising,

a frame,

an extractor plate slidably attached to said frame,

a cam pin attached to said extractor plate,

first cam means rotatably attached to said frame and engageable with said cam pin for linearly moving said extractor plate in a first direction,

a handle for rotating said first cam means,

first and second pins on said extractor plate for engaging an electronic plug-in module, and

second cam means on said handle engageable with said cam pin for moving said extractor plate in a direction opposite to said first direction.

4,453,755

VACUUM CUP VENTURI ASSEMBLY AND BLOW OFF SILENCER

Leland F. Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026, and John G. Laing, St. Clair Shores, Mich., assignors to Leland F. Blatt, Grosse Pointe Shores, Mich.

Filed Aug. 6, 1982, Ser. No. 406,071
Int. Cl.³ B66C *1/02*
U.S. Cl. 294—64 A **7 Claims**

1. In a vacuum cup assembly including a body having a vacuum chamber, a flexible vacuum cup mounted upon said body in communication with said vacuum chamber for supporting a workpiece, a venturi jet assembly sealed within said body connected to a source of pressurized air and to said vacuum chamber, and an air outlet connected to said venturi jet assembly;

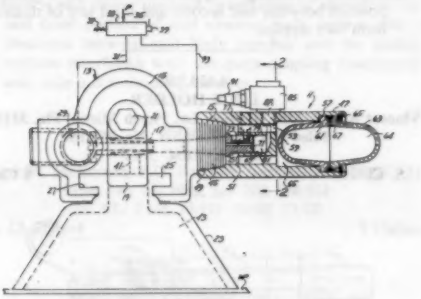
a blow-off silencer including a cylindrical barrel having an axial inlet bore at one end receiving and mounted upon said air outlet;

a transverse apertured web in said barrel communicating with said inlet bore, there being a silencer chamber within said barrel at its other end communicating with said inlet bore and outletting to atmosphere;

a porous air silencer assembly within said silencer chamber;

there being an axial bore extending into said web communicating with said inlet bore;

a reciprocal poppet valve guidably nested within said axial bore for movements between an advanced rest position



and a retracted air blocking position in registry with and closing said air outlet, and defining with said web a poppet pressure chamber;

an air valve connected to a source of pressurized air and in a first position continuously delivering pressurized air to said venturi jet assembly;

a ported pressure fitting upon said barrel connected to said poppet pressure chamber, said air valve in a second position additionally connected to said pressure fitting for pressurizing said poppet pressure chamber, retracting said poppet valve to its air blocking position;

the pressurized air within said jet assembly being by-passed through said vacuum chamber for blowing off the workpiece from said vacuum cup.

4,453,756

WIRELINE FISHING TOOL

James W. Haag, Marrero, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,483
Int. Cl.³ E21B *31/18*
U.S. Cl. 294—86.29 **2 Claims**

1. A fishing tool for retrieving a fish from an inaccessible location comprising,

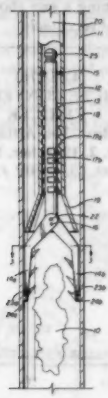
(a) rod means having two toothed jaws pivoted to an outer end thereof and being extendible from a bell shaped housing means toward the fish and being retractable into said housing means for closing the jaws,

(b) first locking means for maintaining said tooth jaws open while being moved toward the fish and for being unlocked for permitting closing of said toothed jaws,

(c) said rod means being connected to said housing means with second locking means,

(d) said first locking means being responsive to said bell shaped housing means for being unlocked thereby for permitting closing of said jaws for grasping said fish for retrieval thereof, and

(e) said second locking means being responsive to said rod means for being unlocked thereby for permitting retrac-



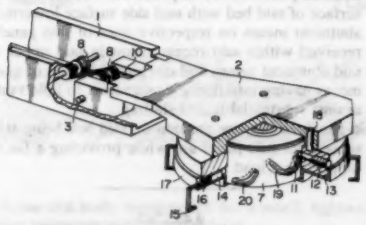
tion of said toothed jaws into said bell shaped housing means for retrieval thereof.

4,453,757

WAFER GRIPPING DEVICE

Minoru Soraoka, Kudamatsu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 324,121
Claims priority, application Japan, Nov. 28, 1980, 55-166545
Int. Cl.³ B25J *15/00*
U.S. Cl. 294—86 R 14 Claims



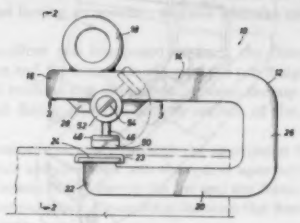
1. A wafer gripping device comprising:
a head;
a rotatably driven drum mounted on the head;
a holder fitted to an outer peripheral portion of the drum and vertically movable along grooves formed on an outer peripheral portion of the drum;
reciprocating rods forced against the drum and supported by the holder;
a claw means provided at a first end of each of said reciprocating rods for gripping a wafer;
opening and closing grooves formed on the outer peripheral portion of the drum, said grooves having different depths in a circumferential direction and accommodating said reciprocating rods therein for radial movement so as to enable an opening and closing of said claw means; and
a holder cover means for enclosing the drum and the holder.

4,453,758

PIPE LIFTING HOOK HAVING CLAMP ASSEMBLY

James H. Codner, 111 W. 38th, #301, Austin, Tex. 78705

Filed Dec. 3, 1981, Ser. No. 327,128
Int. Cl.³ B66C *1/44*
U.S. Cl. 294—104 14 Claims



1. A locking hook mechanism for lifting and handling joints of horizontally oriented pipe such as oil well casing, comprising:
(a) a generally "C" shaped hook member having an elongated lower piper support portion being insertable within one end of a horizontally positioned joint of pipe and having upwardly directed supported engagement with the inner surface of said joint of pipe, said hook member having an elongated upper portion interconnected with said lower pipe support portion and being positioned in spaced relation relative to said lower pipe support portion;
(b) lifting connection means being provided at said upper portion of said hook member at a position above the location of engagement of said pipe support portion with said inner pipe surface, said lifting connection means being connectable to lifting apparatus; and
(c) grip shoe means being movably secured to said upper portion of said hook member and being movable from a released position out of contact with said pipe to a locked position in frictional locking engagement with the outer surface of said joint of pipe, said grip shoe means establishing only sufficient frictional engagement with said outer pipe surface to retain said locking hook mechanism in assembly with said pipe in the absence of lifting force.

4,453,759

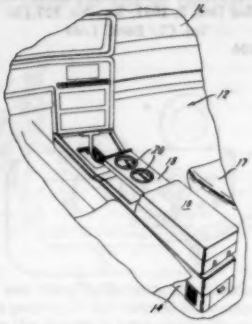
FLOOR CONSOLE WITH LATCHABLE SLIDING TRAY

Shabbir A. Kathiria, Sterling Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/00372, 371 Date Mar. 26, 1982, 102(e) Date Mar. 26, 1982, PCT Pub. No. WO83/03392, PCT Pub. Date Oct. 13, 1983
PCT Filed Mar. 26, 1982, Ser. No. 375,112
Int. Cl.³ B60R *7/00*
U.S. Cl. 296—37.8 14 Claims

1. In a vehicle body passenger compartment having a floor for mounting a pair of seats in laterally spaced relationship about a verticle plane through the longitudinal axis of the vehicle body and including means for mounting an elongated console assembly to the floor in the axially extending space defined between the seats, an improved console assembly characterized in that the console assembly comprises:
A. elongated housing means including means adapted to engage said mounting means for securing said console assembly to said floor, means defining an internal storage cavity and cover means for covering the internal storage cavity; and
B. tray means having at least an upwardly facing flat surface carried in said cover means and slidingly movable with respect thereto between a storage position wherein said tray means is substantially enclosed within said housing means storage cavity and an operative position wherein portions of said tray means flat surface are exposed; and

C. latch means operatively disposed between said tray means and said housing means for selectively holding said tray



means in said storage position or permitting movement of said tray means to said operative position.

4,453,760

COMBINATION RACK-AND-ARMREST ASSEMBLY

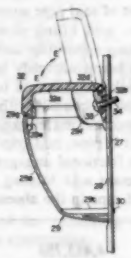
Kazumi Hira, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 14, 1981, Ser. No. 292,928

Claims priority, application Japan, Sep. 12, 1980, 55-129112[U]

Int. Cl.³ B60R 7/04

U.S. Cl. 296—37.13 6 Claims



1. A combination rack-and-armrest assembly for attachment to an inner panel of a door structure of an automotive vehicle body, comprising:

a hollow receptacle secured to the inner panel of the door structure and having an open upper end, the hollow receptacle having an inner wall portion spaced apart inwardly from said inner panel, a pair of side wall portions merging out of the inner wall portion and terminating on the inner panel of the door structure, and a grip portion formed with an upwardly open concavity adjacent the inner panel, said concavity having a width which will allow passage of fingers of an ordinary person thereinto, said inner wall portion, said side wall portions, said grip portion, and a portion of said inner panel defining a receptacle chamber which extends below said grip portion and having below said grip portion a horizontal cross section contiguous to the inner panel of the door structure substantially throughout the extent of the receptacle chamber, and

an armrest member at least in part pivotally movable with respect to said receptacle about a substantially horizontal axis located in close proximity to said inner panel between a first angular position closing the upper end of the chamber in the receptacle and a second angular position inclined upwardly from the first angular position toward the inner panel of the door structure and allowing the chamber in the receptacle to be open upwardly through the upper end thereof, said armrest member being formed with a recess forming a gap above said concavity in the grip portion of the receptacle.

4,453,761

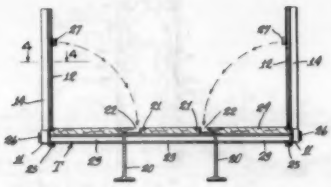
PANEL-SIDED VEHICLE CONVERTIBLE TO FLATBED VEHICLE

J. Phil Felburn, P.O. Box 2344, Arlington, Va. 22202

Filed Apr. 2, 1982, Ser. No. 364,948

Int. Cl.³ B60P 1/64

U.S. Cl. 296—43 10 Claims



1. A roadway vehicle having an elongated bed supported by road-engaging wheels, said bed having a generally flat upper surface formed with recess means therein, and said bed having a plurality of stake pockets spaced apart along a peripheral edge, the improvement comprising:

a plurality of generally flat rigid panels of rectangular shape, each having abutment means extending from a side surface,

a plurality of stakes, each adapted to have its lower end fit into a respective stake pocket for support of said stake in an upright manner, each stake having means for removably receiving a portion of a panel for supporting the panels in an upright edge-to-edge manner whereby said plurality of panels form side panels for said bed,

said stakes being bodily removable from said stake pockets and said panels being bodily disengageable from said stakes, whereby said stakes may be stored on said vehicle and said panels bodily disposed flatwise on said flat upper surface of said bed with said side surface lowermost, said abutment means on respective ones of said panels being received within said recess means in said upper surface, said abutment means and marginal portions of said recess means having interfitting engagement to hold said panels against substantial lateral shifting,

said panels in flatwise position on said bed being stored for subsequent side panel use while providing a flat bed for supporting a load.

4,453,762

LOUVER CONSTRUCTION

Dann T. Deaver, 20565 Williamsburg Ct., Harper Woods, Mich. 48236

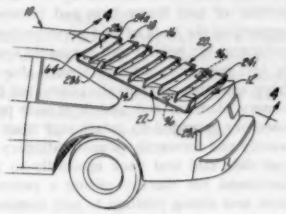
Filed Sep. 17, 1982, Ser. No. 419,460

Int. Cl.³ B60J 3/00

U.S. Cl. 296—97 A 29 Claims

1. A louver construction adapted to be mounted to rear window assemblies of automotive vehicles including windows varying in height, width and shapes such as square, rectangular or trapezoidal, and having a top, a bottom and sides, the louver construction comprising a pair of end cap units and a plurality of elongated louver channels, said end cap units being of a one piece construction, one of said end cap units being of a right hand construction and the other being of a reverse, left hand construction, each of said end cap units comprising a plurality of longitudinally disposed integrally formed end caps, each of said end caps being generally L-shaped in cross section and

having a downwardly extending leg portion and a laterally extending leg portion, a transition portion connecting said downwardly extending leg portion and said laterally extending leg portion to locate said laterally extending leg portion generally horizontally when the louver construction is mounted to a rear window assembly, said laterally extending end portion having a reduced section tongue adapted to be matably received within the end of an associated one of said louver channels, lock means located between said tongue and the mating end of said louver channel, said lock means positively locating said louver channel in alignment with the associated one of said



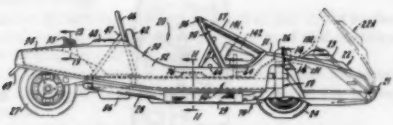
end caps and securing said louver channel to said end cap, said louver channel member being of a preselected length to connect opposite ones of said end caps in said right and left hand end cap units in a predetermined spaced relationship whereby the louver assembly will be of the desired width to fit the rear window assembly, said right and left hand end cap units being of a preselected length having a selected number of associated end caps, said right and left hand end cap units being severable at selected positions along its length whereby a louver assembly can be formed of the desired length to fit a selected rear window assembly.

4,453,763

FRAME AND BODY CONSTRUCTION FOR AUTOMOTIVE PASSENGER VEHICLE

Louis R. Richards, Mokena, Ill., assignor to Trihawk, Inc., Mokena, Ill.

Filed Apr. 13, 1982, Ser. No. 367,898
Int. Cl.³ B62D *27/04*
U.S. Cl. 296—185 **7 Claims**



1. A frame and body construction for a small, lightweight automotive passenger vehicle comprising:

a rigid, open main box frame of tubular metal comprising two side rails spaced from each other and joined at their opposite ends by a front rail and a rear rail;

a unitary, molded one-piece tub of reinforced resin mounted in and filling at least a major part of the open portion of the main frame, the tub having peripheral side flanges that extend over the side rails of the main frame, and tub including depending walls extending below the main frame and affording a continuous support floor for a passenger compartment encompassed by the tub walls and the main frame;

first and second protection bars of tubular metal mounted on and extending over the main frame from one side rail to the other;

and a plurality of resilient mounting means for mounting the tub flanges on the main frame at a plurality of spaced locations, comprising resilient mounts located at each point of attachment between the frame and the protective bars, each resilient mount comprising:

at least one metal spacer affixed to a frame rail and projecting upwardly therefrom through an aperture in the tub flange, the spacer having an internally threaded aperture therein;

a metal mounting plate affixed to the end of the protective bar and having an aperture aligned with the spacer aperture;

a first resilient pad interposed between the frame rail top surface and the bottom surface of the tub flange;

a second resilient pad interposed between the top surface of the tub flange and the bottom surface of the mounting plate;

and a fastener extending through the aperture in the mounting plate and threaded into the spacer aperture to form a rigid connection between the bar and the frame rail and a resilient mounting connection between the frame and the tub flange.

4,453,764

SLIP ON TRAY FOR INFANT SEAT

Michael J. Hennessy, 4142 Couts St., San Diego, Calif. 92103

Filed Jul. 23, 1981, Ser. No. 285,943
Int. Cl.³ A47B *83/02*
U.S. Cl. 297—153 **10 Claims**

1. A tray for use with an infant seat having a seat portion, a back support, side portions, and stop means on the back of said back support, comprising:

a removeable tray member having an opening therein forming a rear positioning bar, said opening being shaped to fit over the infant seat back support and being of a size such that the tray member can be positioned on the infant seat by tilting it with said rear positioning bar lowered and passing said tray member over the infant seat back support with said rear positioning bar passing over and to a position below said stop means, and then tilting the forward end of said tray member down so that said tray member engages and rests on the side portions of said infant seat and said rear positioning bar engages the lower portion of said stop means for providing cantilevered support of said tray by said side portions and said stop means.

4,453,765

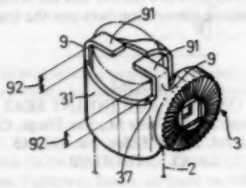
SADDLE FOR BICYCLE

Tetsuo Kashima, Osaka, Japan, assignor to Kashima Saddle Mfg. Co., Ltd., Osaka, Japan

Continuation of Ser. No. 184,901, Sep. 8, 1980, Pat. No. 4,369,999, which is a continuation of Ser. No. 926,028, Jul. 19, 1978, abandoned. This application Sep. 23, 1982, Ser. No. 422,132
Claims priority, application Japan, Apr. 18, 1978, 53-51502
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ B62J *1/00*
U.S. Cl. 297—195 **5 Claims**

1. A saddle support for securing a saddle to the top of a rigid

seat pillar of uniform diameter, the seat pillar having an upper end surface defining an upper end profile, the support having first and second opposed clip washers for engagement with a loop clip, the first and second opposed clip washers having mounting holes formed therein, the loop clip comprising a substantially semicircular clip band fitting around the seat pillar, the first and second holding portions extending from opposite ends of the clip band and opposed to each other, each of the holding portions having a curved portion in the form of a circular arc and fitting around the seat pillar on its inner side and a bearing surface on its outer side for engagement with one of the clip washers, the first and second holding portions having mounting holes formed therein aligned with the mounting holes in the first and second opposed clip washers, the first and second holding portions and the first and second opposed clip washers being tightly fastened together by a fastener passing



through the mounting holes in the first and second clip washers and the first and second holding portions, the loop clip also including a stopper formed on and extending a small distance from an upper end portion of the loop clip, the stopper being a finger-like extension having a first section extending upward from the clip band and a second section extending inward from the clip band over the upper end surface of the seat pillar and terminating within the upward extending profile of the seat pillar, the second section having an in abutting surface in abutting the upper end surface of the seat pillar throughout substantially the entire area of the second section, the second section projecting substantially to the center of the seat pillar, the stopper having a width less than that of the seat pillar and positioned over the upper end of the seat pillar to cover a substantial portion thereof such that downward slippage of the long clip relative to the seat pillar is thereby prevented.

4,453,766

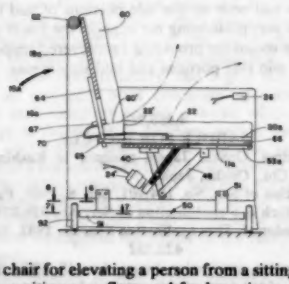
LIFT CHAIR FOR DISABLED PERSON

Fred DiVito, 29 Belknap Dr., Northport, N.Y. 11768

Filed Apr. 5, 1982, Ser. No. 365,485

Int. Cl.³ A47C *1/00*

U.S. Cl. 297—316 **8 Claims**



1. A lift chair for elevating a person from a sitting position to a standing position on a floor and for lowering a person from standing to sitting position, comprising:

a stationary platform;

a pair of spaced vertical sides supporting said platform;

a seat carried by said platform and arranged to support said person with his feet in contact with said floor at all times, said seat having a stationary horizontal rear seat portion, and a front seat portion rotatable between a horizontal position coplanar with said rear seat portion to support said person in sitting position with feet in contact with said floor and a substantially vertical position disposed forwardly and

above said rear portion to support said person in standing position on said floor;

a pair of seat frame bars rigidly connected beneath said front seat portion;

a movable seat back carried by a rearwardly extending portion of said frame bars and between said sides for supporting the back of said person sitting on said seat;

a horizontal bar behind said moveable seat back supported by said sides and vertically spaced above said seat; and

a drive assembly operatively connected between said stationary platform and said front seat portion, said drive assembly arranged to rotate said front seat portion upwardly and forwardly of said stationary rear seat portion and slide said seat back upwardly to rotate about said horizontal bar thereby raising a person seated thereon from said sitting position to said standing position while the persons feet remain in contact with said floor at all times.

4,453,767

HINGE, PARTICULARLY FOR SEATS WITH ADJUSTABLE BACKS

Hansjörg Walk, Reutlingen, and Wilhelm Wingensiefen, Odenthal, both of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG, Remschied-Hasten, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,755

Claims priority, application European Pat. Off., Sep. 20, 1980, 80105654

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—362 **5 Claims**

1. A hinge, particularly for a seat with an adjustable back, comprising two hinge parts movable relative to one another about a pivot axis between a plurality of relative positions: a rotatable shaft member defining said pivot axis; and means for adjusting the relative position between said hinge parts and formed as a transmission, said adjusting means including an eccentric arranged on said shaft member for joint rotation therewith and having an inclined surface, a first gear associated with one of said hinge parts, and a second gear associated with the other of said hinge parts and engaging with said first gear, said first gear being provided with a bearing engaging with said surface of said eccentric, said shaft member together with said eccentric being displaceable in an axial direction with the aid of an accumulator for obtaining a radial displacement between said hinge parts, said eccentric being formed as a

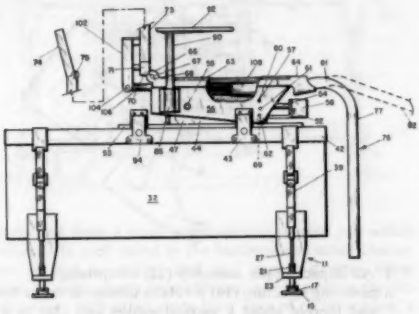
truncated cone having a predetermined inclination, and said bearing having a conical bore, with an inclination corresponding to the inclination of said truncated cone of said eccentric and having a somewhat greater diameter than the latter, said truncated cone of said eccentric and said conical bore of said bearing forming a bearing pair having predetermined static friction angle and sliding friction angle, said inclination having an angle which is smaller than said static friction angle and greater than said sliding friction angle of said bearing pair, and the relative position of said hinge parts being adjustable by a user by only rotating said shaft member with said eccentric.

4,453,768

PORTABLE RECLINING EXAMINATION CHAIR

H. Bruce Cranford, Jr., Damascus; L. Thomas Geasey, Thurmont, and Mark F. Arnold, Westminster, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 20, 1981, Ser. No. 323,626
Int. Cl.³ A47C *4/02*
U.S. Cl. 297—440 **7 Claims**



1. A portable and stable multi-component reclining chair suitable for the practice of military medicine in the field comprising:

a container for removably storing components of said chair, said container having two pairs of opposite sides, an upper surface and a lower surface;

a plurality of legs;

means for detachably securing said legs to said lower surface and to one pair of said two pairs of sides of said container for supporting said container on the ground;

each of said legs having independent screws studs for adjusting its length to level said container when on uneven ground;

said components further comprising;

a seat having a back edge and a front edge;

means for detachably mounting said seat to said upper surface of said container;

a back rest rotatably attached to said back edge of said seat;

means for rigidly positioning said back rest relative to said seat; and

a head rest pivotably and adjustable attached to said back rest for supporting a patient's head.

4,453,769

IN SITU OIL SHALE RETORT HAVING HORIZONTAL VOIDS WITH SIDE PILLARS

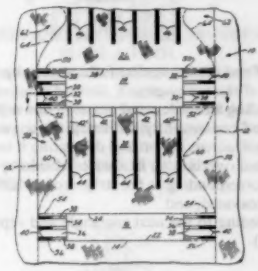
Thomas E. Ricketts, Grand Junction, and Robert S. Burton, Mesa, both of Colo., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Feb. 18, 1982, Ser. No. 349,865
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **36 Claims**

1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed within upper, lower, and vertically extending side boundaries of a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, comprising the steps of:

excavating formation from within the retort site for forming at least one void extending horizontally across the retort site, the width of the void being less than the distance between a pair of opposite vertically extending side boundaries of the retort site, leaving at least a pair of roof-supporting side pillars of unfragmented formation within the retort site along opposite sides of the horizontal void, the side pillars providing roof support for unfragmented formation within the retort site above the void, the side pillars having peripheral interior walls at opposite ends of the void spaced inwardly from the vertical side boundaries of the retort site; and leaving at least one zone of unfragmented formation within the retort site above or below the horizontal void;

placing an array of explosive charges in such a zone of unfragmented formation, wherein edge charges in said



array are spaced inwardly from the side boundaries of the retort site adjacent the side pillars, the edge charges being placed adjacent the interior walls of the side pillars;

placing explosive charges in the side pillars along opposite sides of the void;

initiating detonation of explosive in the side pillars prior to initiating detonation of explosive in the zone of unfragmented formation, for explosively expanding the side pillars toward the void prior to explosively expanding the zone of unfragmented formation toward the horizontal void for forming a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort;

establishing a retorting zone in an upper portion of the fragmented mass;

introducing a retorting gas into the fragmented mass for sustaining the retorting zone and for advancing the retorting zone through the fragmented mass; and

withdrawing liquid and gaseous products from a lower portion of the fragmented mass on the advancing side of the retorting zone.

4,453,770

MINING METHOD AND SYSTEM

Thomas H. Dalrymple, and Hal I. Dunham, both of Marion, Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 16, 1981, Ser. No. 321,853
Int. Cl.³ E21C *41/00*
U.S. Cl. 299—7 **5 Claims**

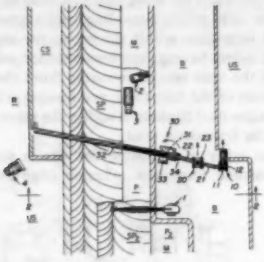
2. A method of relocating a soil layer in a strip mining operation in which the overburden underlaying said soil layer and overlaying the targeted mineral seam is separately removed along the highwall side of an elongated pit and deposited in a

previously mined out area on the opposite side of the pit, comprising the steps of:

(a) dividing an area of the soil layer into a series of rectangles aligned end-to-end parallel to the pit;

(b) further dividing each of said rectangles into a series of side-by-side strips extending parallel to the pit and end-to-end of the rectangle;

(c) providing an excavator on the highwall bench and excavating the soil layer from each rectangular area starting with the strip nearest the pit and proceeding end-to-end



thereof and then in similar fashion strip-by-strip across the width of the rectangle;

(d) providing a cantilevered cross-pit conveyor on the highwall and concurrently with step (c) conveying the excavated soil across the pit and depositing it on the separately relocated overburden in a series of side-by-side elongated piles corresponding to the strips from which said soil layer was excavated; and

(e) proceeding to the next rectangle and repeating steps (c) and (d).

4,453,771

MINERAL WINNING PLOUGH WITH SWORD PLATE FORMED OF PLURAL PARTS

Gerhard Merten; Bernd Steinkuhl, both of Lunen, and Oswald Breuer, Dortmund, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,567

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106548

Int. Cl.³ E21C *27/35*

U.S. Cl. 299—34 **13 Claims**

1. In a mineral mining installation including a longwall conveyor and a mineral winning plough drivable to and fro along the face side of the conveyor by means of a plough drive chain and a multi-part sword plate, the drive chain being positioned at the goaf side of the conveyor, the sword plate being attached to the plough and passing underneath the conveyor, the sword plate having at least one pair of adjacent parts, and said at least one pair of adjacent sword plate parts being detachably joined together by a pivotal connection, the improvement comprising: forming the pivotal connection by a pair of detachable pivot joints positioned respectively adjacent to the face and goaf sides of the conveyor, each goaf-side pivot joint including a connector having first and second chain links, the first chain link engaging over a hookshaped coupler provided on one of the associated sword plate parts, and the second chain link engaging over a coupler provided on the other associated sword plate part, the second chain link being fixed to the coupler of the other associated sword plate part by means of a detachable locking member.

4,453,772

MODULAR IMPACT RIPPER ASSEMBLY

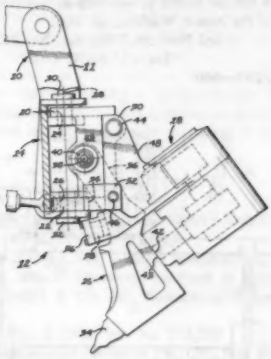
Michael A. Roussin, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/01345, 371 Date Sep. 27, 1982, 102(e) Date Sep. 27, 1982

PCT Filed Sep. 27, 1982, Ser. No. 444,252

Int. Cl.³ E01C *23/09*; A01B *35/00*

U.S. Cl. 299—37 **8 Claims**



1. An impact ripper assembly (12) comprising:

a mounting structure (14) pivotally connectable at a forward end thereof about a vertical swivel axis (28) to a draft device (10), said mounting structure including an upper (20) and a lower (22) flange each of which has an opening (24,26) therein, said openings (24,26) being aligned along said vertical swivel axis (28) and a pair of transversely separated side plates (23) joined to said upper (20) and lower (22) flanges;

a ripper element (16) removably pivotably connectable about a horizontal pivot axis (38) to said mounting structure (14) and having an impact surface (42); and

an impactor apparatus (18) which is removably connectable to said mounting structure (14) independent of said ripper element (16), said impactor apparatus (18) being disposed at the rearward end of said mounting structure (14) and having an impacting surface (43) for engaging said impact surface (42).

4,453,773

PAVEMENT BREAKING APPARATUS

Roger L. Toffolon, 953 MacArthur Blvd. SE., Stuart, Fla. 33494

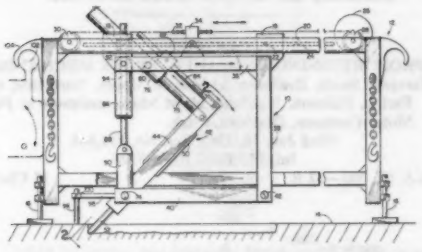
Filed Dec. 30, 1982, Ser. No. 454,738

Int. Cl.³ E01C *23/09*

U.S. Cl. 299—37 **9 Claims**

1. Apparatus for breaking concrete and asphalt pavement and the like and comprising a frame adapted to be supported by and above pavement to be broken, power operated means operatively associated with said frame for moving the latter in one and an opposite direction relative to the pavement and in parallel relationship thereto, a plurality of power operated impact devices each including a reciprocable cutting tool having operating and return strokes occurring in rapid succession, the former strokes for engaging and breaking pavement and the like, said devices being supported in a gang parallel arrangement by said frame with their cutting tools aligned in a

closely spaced parallel series and with their cutting ends substantially aligned when the series of tools is viewed from end-to-end, and said devices being arranged so that the cutting ends of their tools are adjacent the pavement with the series of tools and their cutting ends in parallel relationship with the pavement and extending substantially at right angles relative to the direction of frame movement, said frame movement in one and an opposite direction thus serving to move the tools parallel to the pavement substantially at right angles relative to said one and opposite directions, and said frame movement thus serving to define a predetermined generally rectangular path of movement and pavement breaking operation of the cutting tools relative to the pavement, impact device support means on said frame movable relative to the frame for adjusting the angle of attack of the cutting tools relative to pavement therebeneath, said means supporting the impact devices and their cutting tools for angular adjustment so that the lines of reciprocation of the tools can be preselected to provide angles of attack which are displaced substantially from both the surface of the



pavement and from a plane perpendicular thereto and which are particularly well suited to the hardness and other characteristics of the pavement, and said impact devices being mounted on said support means for movement relative thereto and relative to each other along their lines of reciprocation, a resilient biasing means operatively associated with each of said impact devices at an end thereof opposite its cutting tool and independently urging the same bodily along its line of reciprocation toward its said tool, stop means operatively associated with each impact device and limiting such movement of the device along its line of reciprocation toward its cutting tool, a separate trigger means operatively associated with each impact device, and a trigger actuating means for each trigger operable to actuate an associated impact device on rearward movement of the impact device against the urging of its resilient biasing means and away from its stop means, operation of each impact device thus being individually controlled and individually terminated when a desired depth of pavement cut has been achieved.

4,453,774

DRIVING ARRANGEMENT FOR LONGWALL MINING MACHINES

Volker Knorr, Sprockhovel, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinefabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

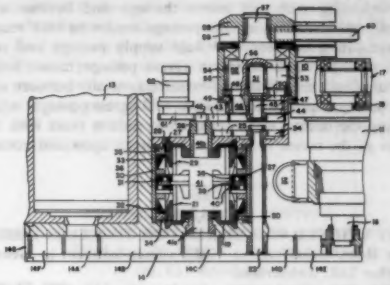
Filed Jan. 10, 1983, Ser. No. 457,025

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200565

Int. Cl.³ E21C *29/22*

U.S. Cl. 299—42 **6 Claims**

1. In a longwall mining machine of the type having a rack extending along a track for the mining machine, a gear wheel on the machine engageable with the rack for moving the machine along a track, at least one driving motor on the machine, at least two shearer drums carried by the machine, and gear train means connecting said driving motor to said shearer drums to rotate the same; the improvement in said mining machine which comprises two inductive clutches having a common armature connected through reduction gearing to said gear wheel, and separate rotors for the respective clutches



connected to said gear train such that one rotor will rotate in a direction opposite to the other.

4,453,775

CUTTING TOOL AND METHOD OF MANUFACTURING SUCH A TOOL

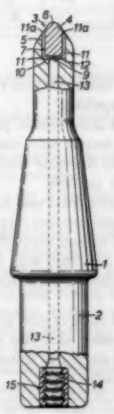
Raymond J. Clemmow, Sheffield, England, assignor to Padley & Venables Limited, Sheffield, England

Filed Nov. 18, 1981, Ser. No. 322,452

Claims priority, application United Kingdom, Nov. 24, 1980, 8037568

Int. Cl.³ E21C *35/18, 35/22*

U.S. Cl. 299—81 **25 Claims**



1. A mineral mining pick assembly comprising: a body with a head; a cutting insert part including a hard material component; a recess in said head having a bottom wall and a continuous axially extending peripheral surface, said insert part having a cutting tip and a bottom end, said insert part mounted in said recess with said bottom end abutting and supported on said bottom wall of said recess, said insert part having an outer surface press or shrink fitted and retained in said recess by compressive retaining forces of said peripheral surface in said recess acting radially upon said insert part, said fit between said recess and said insert part being sufficiently tight to provide a fluid seal therebetween and to retain said insert part therein in response to repeated impact upon said cutting tips, said cutting insert part at least partly defining externally of the hard material component a plurality of spaced egress passages in a peripheral region thereof extending from said bottom end to said

cutting tip, said egress passages communicating with a plurality of outlet ports through which fluid is directed onto the cutting tip thereof; said body having a fluid supply passage communicating with said recess through said bottom wall thereof; and extension egress passage means in said recess communicating between said fluid supply passage and said egress passages, said extension egress passage means being external of said insert part and extending radially between said insert part and said bottom wall to said egress passages while allowing the bottom end of said insert part to react with the bottom of the recess in response to impact upon said cutting tip.

4,453,776

CAST VEHICLE WHEEL RIM FOR TUBELESS TIRES

Jakob Rohr, Schaffhausen, Switzerland, assignor to George Fischer Ltd., Switzerland

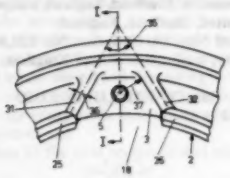
PCT No. PCT/CH81/00006, 371 Date Sep. 11, 1981, 102(e) Date Sep. 11, 1981, PCT Pub. No. WO81/02140, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 21, 1981, Ser. No. 302,431

Claims priority, application Switzerland, Jan. 22, 1980, 493/80

Int. Cl.[3] **B60B** *21/00*; **B60C** *29/00*

U.S. Cl. 301—5 VH **8 Claims**



1. A one-piece, cast vehicle wheel rim, particularly for use with tubeless tires, comprising

a rim portion with a drop center portion defined between opposed first and second side walls and with a shoulder extending from said first side wall in a direction opposite to said drop center portion;

a support ring extending from said rim portion for mounting the rim on a disc, said support ring having a recess defined between end areas of said support ring;

a valve hole in said first side wall adjacent said recess for mounting a valve therein such that the valve extends into said recess;

a rib connected with each of said end areas of said support ring and said shoulder, said ribs extending radially from said end areas and angularly toward each other in a radially outward direction.

4,453,777

RELAY VALVE ASSEMBLY

Ronald O. Newton, Adams, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 224,932, Jan. 14, 1981, Pat. No. 4,421,360. This application May 31, 1983, Ser. No. 499,450

Int. Cl.[3] **B60T** *8/18*

U.S. Cl. 303—2 **9 Claims**

1. In a vehicle having rail wheels, road wheels, a brake system for said rail wheels including a rail brake cylinder and a fluid brake control system, the improvement being said brake control system which comprises:

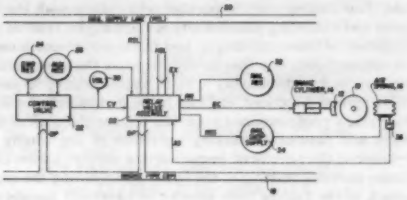
a rail brake control pipe for transmitting rail brake signals;

control valve means responsive to brake signal changes of pressure in said brake control pipe to provide control signals;

rail supply line to be charged during rail use;

highway supply line separate and distinct from said rail supply line to be charged during highway use; and

relay valve means responsive to said control signal for governing the flow of fluid from said rail supply line to said rail brake cylinder and responsive to the presence of a predetermined pressure in said highway supply line for maintaining said rail brake cylinder deactivated.



4,453,778

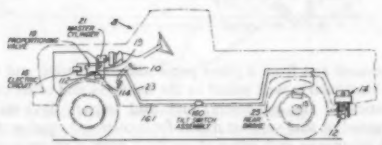
PROPORTIONING HYDRAULIC BRAKE MECHANISM

Terrence Smith, Dearborn; Thomas S. Moore, Northville, and Earl L. Helmers, Westland, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 10, 1980, Ser. No. 111,065

Int. Cl.[3] **B60T** *8/18, 8/26*

U.S. Cl. 303—22 R **17 Claims**



1. A hydraulic brake control mechanism for a motor vehicle, said mechanism comprising:

a load sensing device mountable to said motòr vehicle;

a proportioning valve mountable to said motor vehicle;

said valve having an inlet connectable to a hydraulic brake line and an outlet connectable to a hydraulic line that is operably connected to a set of rear brakes for said motor vehicle;

means for adjusting said valve such that the minimum pressure needed to close said valve is variable;

an electrical circuit operably connected to said load sensing device and to said adjusting means such that said adjusting means is electrically actuated to adjust said valve with said valve adjustment being dependent upon weight sensed by said load sensing device; and

said electric circuit includes a speed sensing cutoff switch means for deactivating said circuit when said vehicle is moving faster than a predetermined speed such that said circuit is activated to actuate said adjusting means only when said vehicle is still or moving below a predetermined speed.

4,453,779

ADJUSTABLE VARIABLE LOAD CONTROL VALVE DEVICE

Robert J. Bridigum, Plum Borough, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Feb. 18, 1982, Ser. No. 349,882

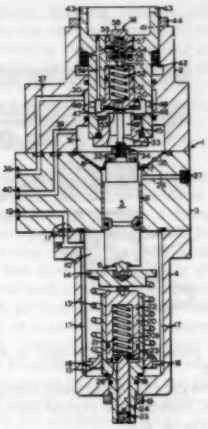
Int. Cl.[3] **B60T** *8/18*

U.S. Cl. 303—22 A **13 Claims**

1. An adjustable variable valve device comprising,

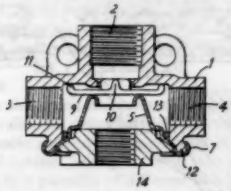
(a) a casing having a supply chamber and a delivery and piston chamber,

(b) an externally adjustable cartridge disposed within said casing,
(c) a check valve carried by said cartridge for controlling communication between said supply chamber said delivery and piston chamber,
(d) an operating piston movable between an open and closed position,
(e) a biasing pressure chamber remote from said delivery and piston chamber and formed at one end of said operating



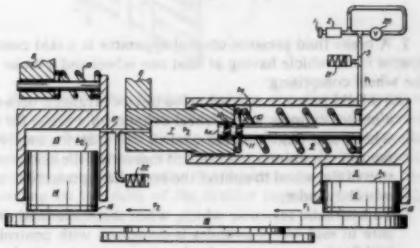
piston for urging said operating piston in one direction to its open position to hold said check valve in its open position, and
(f) a resilient diaphragm connected to the other end of said operating piston to move said operating piston in the opposite direction to its closed position when a certain maximum pressure is reached in said delivery and piston chamber to allow said check valve to move to its closed position.

4,453,780
VALVE ASSEMBLIES
Brian P. Neal, Kingswood, England, assignor to Bendix Limited, Bristol, England
Filed Dec. 11, 1981, Ser. No. 329,787
Claims priority, application United Kingdom, Dec. 13, 1980, 8040011
Int. Cl.³ B60T *15/52*
U.S. Cl. 303—69 **10 Claims**



1. An exhaust valve assembly comprising:
a housing having a cavity, input and outport ports in communication with said cavity, and a housing lip disposed about said cavity, a cover engaging said housing to cover the cavity and having a portion extending axially to said cavity and a perimeter flange, the portion having an opening providing an exhaust opening for said assembly, a flexible sealing member positioned relative to said input port by the portion of said cover, the perimeter flange of the cover formed over said housing lip to secure the cover to the housing and enable the portion to maintain the position of the sealing member relative to said input port, whereby said sealing member is operative in response to fluid pressure at said input port to close said exhaust opening and provide communication between said input and output ports, and the sealing member also being responsive to greater fluid pressure at said output port than at said input port to provide communication between said output port and exhaust opening.

4,453,781
ANTI-SKID BRAKING SYSTEM
Joseph L. Poggie, 815 Iris La., Vero Beach, Fla. 32960
Filed Jan. 28, 1982, Ser. No. 343,529
Int. Cl.³ B60T *8/06*
U.S. Cl. 303—112 **8 Claims**



1. An anti-skid braking system comprising in combination:
a rotatable wheel;
a rotatable disc attached to said rotatable wheel for rotation therewith;
a main brake means for resisting the rotation of said rotatable disc and wheel when actuated;
master cylinder means for actuating said anti-skid braking system;
pilot brake means operatively connected to said master cylinder means for actuation by said master cylinder means to apply frictional braking force against said rotatable disc for braking said wheel, said pilot brake means having at least a portion thereof movable responsive to said rotating disc when said pilot brake is resisting the rotation of said disc; and
a power converter means for transferring a braking force from said master cylinder means and from said pilot brake means to said main brake means for applying a frictional braking force to resist said rotatable disc, said power converter means having means for controlling the braking force of said main brake means between the force applied from the master cylinder means and the force applied by the pilot brake means movement responsive to said rotating disc when said pilot brake is resisting the rotation of said disc, said power converter means having a first cylinder connected to said master cylinder means and to said pilot brake means and a second cylinder connected to said first cylinder and to a main brake means cylinder and a sliding piston connected to said pilot brake means for sliding in said power converter means second cylinder to block the connection between said first and second cylinders and to drive fluid in said second cylinder to operate said main brake responsive to said pilot brake moving responsive to said rotating disc, and whereby skidding is prevented in a braking system.

4,453,782

BRAKE FLUID PRESSURE CONTROL APPARATUS IN SKID CONTROL SYSTEM

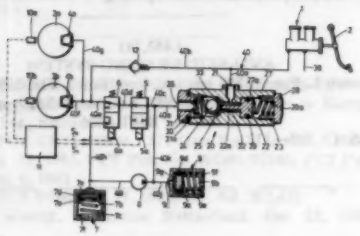
Tetsuro Arikawa, and Yasuo Samatsu, both of Kanagawa, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Nov. 25, 1981, Ser. No. 324,797

Claims priority, application Japan, Nov. 29, 1980, 55-168954; Dec. 8, 1980, 55-172889

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—116 **16 Claims**



1. A brake fluid pressure control apparatus in a skid control system for a vehicle having at least one wheel and a brake for the wheel comprising:

(A) a fluid pressure control valve device arranged between a master cylinder and a wheel cylinder of a brake for the wheel, said fluid pressure control valve device receiving control signals of a control unit measuring the skid condition of the wheel to control the brake fluid pressure to said wheel cylinder;

(B) a hydraulic reservoir which, when the brake fluid pressure to said wheel cylinder is decreased with control of said fluid pressure control valve device, reserves the brake fluid discharged through said fluid pressure control valve device from said wheel cylinder;

(C) a pressure fluid supply conduit connecting said master cylinder with said fluid pressure control valve device;

(D) a fluid pump for returning the brake fluid from said hydraulic reservoir into said pressure fluid supply conduit; and

(E) a controllable check valve device arranged in said pressure fluid supply conduit, including a control portion responsive to a fluid pressure of the master cylinder or the outlet of the pump, said control portion permitting said controllable check valve device to make the free communication between said master cylinder and said fluid pressure control valve device when said fluid pressure to the control portion is lower than a predetermined pressure, and permitting said controllable check valve device to open when said fluid pressure to the control portion is higher than said predetermined pressure, and only when brake fluid flows from said master cylinder toward said fluid pressure control valve device, and the outlet of said fluid pump being connected to said pressure fluid supply conduit between said controllable check valve device and said fluid pressure control valve device.

4,453,783

BEARING SUPPORT STRUCTURE

Joseph Davis, Vernon, and Richard T. White, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,491

Int. Cl.³ F16C *27/04*

U.S. Cl. 308—184 R **4 Claims**

1. In a bearing structure:

a fixed support structure;

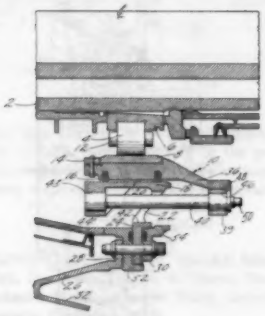
a shaft;

a bearing for the shaft having an outer race;

a supporting sleeve for the outer race having an outwardly extending flange thereon;

an outer damper sleeve surrounding said supporting sleeve and being spaced therefrom to provide an oil damping film;

a frustoconical element extending outward from the end of said outer sleeve adjacent the flange on the supporting sleeve, said element also having a flange at its outer end for attachment to the fixed support structure;



a plurality of parallel rods arranged in a ring around the outer sleeve;

an end flange on the end of said outer sleeve remote from the frustoconical member and remote from the flange on the supporting sleeve; and

said rods being secured at one end to said end flange and at the other end to the flange on said supporting sleeve, said frustoconical element having openings through which the rods extend, with the flange on the element outside the plurality of rods.

4,453,784

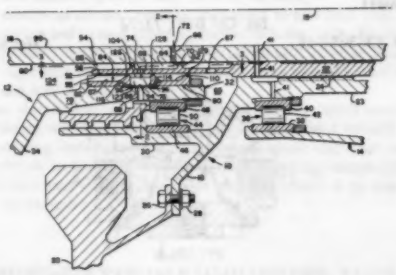
MEANS FOR FEEDING OIL BETWEEN COUNTERROTATING SHAFTS

Robert J. Kildea, Juno Isles; Jorge A. Alcorta, Hobe Sound, and Robert B. Richardson, Juno, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1983, Ser. No. 490,699

Int. Cl.³ F16C *33/66;* **F01D** *25/18*

U.S. Cl. 308—187 **5 Claims**



1. A shaft assembly comprising:

first shaft means rotatable about an axis and including an inner shaft portion, an outer shaft portion spaced radially outwardly from said inner shaft portion, and sleeve means surrounding said inner shaft portion defining a first axially extending annulus between said sleeve means and inner shaft portion;

second shaft means rotatable about said axis in a direction

counter to the direction of rotation of said first shaft means and including means defining a shaft end portion disposed radially between said inner shaft portion and outer shaft portion of said first shaft means and having a radially inwardly facing surface spaced radially outwardly from said sleeve means defining a second axially extending annulus between said shaft end portion and sleeve means, including means defining a plurality of circumferentially and closely spaced apart recesses in said inwardly facing surface;

first bearing means disposed between said second shaft means end portion and said first shaft means outer shaft portion, said bearing means comprising inner race means, outer race means, and rolling elements disposed between said inner and outer race means, said outer race means being attached to and fixed relative to said first shaft means outer shaft portion, said inner race means being attached to and fixed relative to said second shaft means end portion;

said first shaft means including wall means extending radially inwardly from said sleeve means to said inner shaft portion across said first annulus defining a plurality of separate oil compartments within said first annulus, said wall means being constructed and arranged to permit substantially free flow of fluid axially through said first annulus around each of said oil compartments;

said inner shaft portion having oil entrance passageways therethrough, at least one of said entrance passageways being in fluid communication with each of said oil compartments for bringing oil into each of said compartments, and said sleeve means having an oil exit passageway therethrough in fluid communication with each of said oil compartments for carrying oil away from each of said compartments, each of said exit passageways having an outlet in the same axial plane as said recesses in said second shaft means end portion for directing oil from said oil compartments, across said second annulus, into said recesses, said oil entrance passageways each including an outlet which opens into said oil compartment to which said oil entrance passageway corresponds, and said oil exit passageways each including an inlet which opens into said oil compartment to which said exit passageway corresponds, said entrance passageway outlet and said exit passageway inlet of each of said oil compartments being misaligned; and

means defining second passageways in said second shaft means in fluid communication with said recesses for carrying fluid from said recesses, through said second shaft means, to said first bearing means inner race means.

4,453,785

MODULAR CABINET FOR DIFFERENT VIDEO GAME CARTRIDGES, CASSETTES, AND INSTRUCTION BOOKLETS

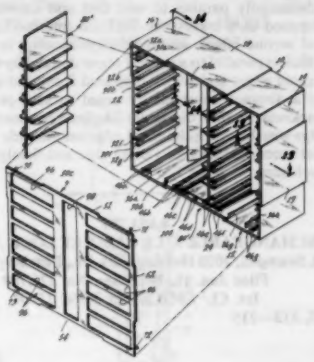
Richard D. Smith, 28640 Vista Madera, San Pedro, Calif. 90732

Continuation-in-part of Ser. No. 138,222, Apr. 7, 1980, Pat. No. 4,306,655. This application Oct. 19, 1981, Ser. No. 312,390

Int. Cl.³ A47B *81/06*

U.S. Cl. 312—10 **1 Claim**

1. A modular cabinet unit constructed for holding in uniform positions, a plurality of objects which may be video game cartridges and audio and video tape cassettes of different sizes and shapes, said cabinet haivng an open side constructed to receive any one of a plurality of different face plates, each of said plurality of face plates having in it a plurality of rectangular openings, the openings in individual face plates each being of a size to have inserted through it a particular one of said objects, a plurality of face plates constructed to close the said open side of the cabinet, the said cabinet having an interior construction including means extending upwardly from its side walls in the form of ribs in a position to retain objects inserted through the openings in the face plate with the said objects held in uniform predetermined relationship permitting ready retrieval and removal through the openings in the said face plate, the cabinet having a wall opposite the said open side, said wall having spaced partition members extending inwardly from it a predetermined distance, said partial partition members being spaced at predetermined distances apart, a plurality of divider members insertable into the cabinet between its top and bottom walls and removable therefrom, the top and bottom walls having inwardly extending ribs to form guideways



for the ends of the divider members, the divider members having relatively short extending ribs on opposite sides thereof which are aligned with ribs on the inside of the cabinet walls, the cabinet being of a size to accommodate having objects inserted in a position wherein the objects are supported on ribs extending on the sides of the divider members and the side walls of the cabinet.

4,453,786

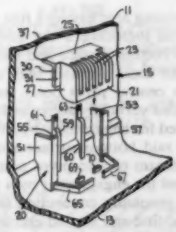
MOUNTING ARRANGEMENT FOR TABLET-LIKE RUST INHIBITOR

Harper Landell, Downingtown, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Sep. 20, 1982, Ser. No. 420,302

Int. Cl.³ A61L *9/00*

U.S. Cl. 312—31.1 **11 Claims**



1. A structure for firmly supporting a tablet-like member while exposing a maximum of surface area of the tablet-like member to ambient air, said tablet having a predetermined width, a predetermined length and an edge of predetermined thickness, wherein said structure is an integrally-formed plastic unit comprising:

an enclosure having front and rear walls, at least a first of which is provided with a plurality of openings to permit air to freely flow into said enclosure, and an open end for permitting edgewise insertion of said tablet-like member into said enclosure between said front and rear walls;

first and second support members projecting inwardly of said enclosure a first predetermined distance from one of

said front and rear walls, said support members terminating in respective first and second substantially parallel longitudinally-extending edges spaced transversely from one another by a distance which is less than said predetermined width; and

a third support member projecting inwardly of said enclosure rfrom the other of said front and rear walls and terminating in a third longitudinally-extending edge disposed substantially parallel to said first and second edges and disposed at a transverse location intermediate said first and second edges, said third edge residing in a first plane which is parallel to a second plane defined by said first and second edges and which is spaced from said second plane by a distance substantially equal to said predetermined thickness so that the tablet-like member can be inserted edgewise between the third edge on one side and the first and second edges on its other side and firmly held in said enclosure.

4,453,787

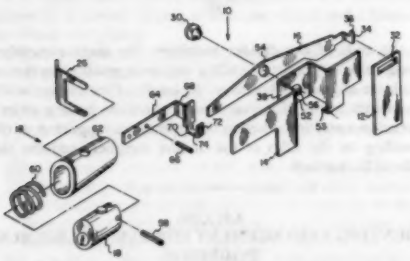
INTERCHANGEABLE FILE CABINET LOCK ASSEMBLY

Paul R. Staropoli, 2020 Holiday Park Dr., Pittsburgh, Pa. 15239

Filed Jun. 11, 1981, Ser. No. 272,789

Int. Cl.³ E05B *65/46*; E05C *15/04*

U.S. Cl. 312—215 **9 Claims**



1. An interchangeable lock assembly for a vertical file cabinet having a plurality of drawers and a lock bar extending vertically between the drawers and an interior cabinet side and movable from a first position for lockably engaging the drawers and a second position for disengaging the drawers comprising

A. a lock operating arm having a first end and a second end, said first end including a top surface, said second end including a bottom surface and terminating in means for engaging the lock bar, said lock operating arm further including a central pivot point, an area along said top surface spaced vertically above and upstream of said pivot point adapted for engagement by a rotary lock cam and an area along said bottom surface spaced vertically below and downstream of said pivot point and defining a cam slide adapted for engagement by a plunger lock arm,

B. means for pivotably connecting the lock operating arm between the first and second end to the cabinet, and

C. a lock for engaging one of said top and bottom surfaces to operate said lock bar between its first and second position.

4,453,788

PORTABLE DESK

Jack M. Russell, 1707 Reynolds Rd., Lot 19, Lakeland, Fla. 33801

Filed Jul. 16, 1981, Ser. No. 283,947

Int. Cl.³ A47B *23/00*; B60R *7/08*

U.S. Cl. 312—231 **6 Claims**

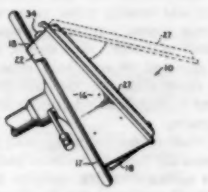
1. A portable writing desk for use in both a vehicle having a steering wheel inclined relative to the horizontal, and on a horizontal surface, said writing desk comprising:

means presenting a flat surface;

first and second hook means coupled with said surface and projecting away from it for engagement with said steering wheel,

each of said hook means being characterized by a closed configuration of generally polygonal cross section, a flat bottom, and an absence of any open protrusions, so as to present a foot support for said flat surface presenting means when the latter is placed on said horizontal surface;

a plurality of sidewalls coupled with said flat surface presenting means and projecting upwardly therefrom, said sidewalls increasing in height as they extend away from



the end of said surface presenting means where said hook means are located;

means presenting a writing surface and being hingedly coupled with one of said sidewalls at the same side of said surface presenting means as the side where said hook means are located,

whereby when said hook means engage said steering wheel said writing surface is inclined toward said hook means and when said hook means are placed on a horizontal surface said writing surface is inclined away from said hook means.

4,453,789

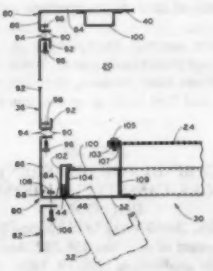
SHELTER FOR ELECTRONIC GAMES

C. Barton Gullong, 163 Lynn Ave., Hampton Bays, N.Y. 11946

Filed Apr. 15, 1982, Ser. No. 368,562

Int. Cl.³ A47B *88/00*

U.S. Cl. 312—324 **1 Claim**



1. A game-enclosing structure having an internal operative area for maintaining a game in an optimum condition protected against vandalism comprised of a front panel, rear panel, roof, and opposite side panels interconnected into a unitary structure bounding said internal operative area, said front panel having a front rectangular -shaped door opening sized to mount at least one door therein, a hinge sized to extend the long dimension of said door opening and operatively oriented vertically in attached relation to a side of said door opening so as to hingedly mount a cooperating door therein, two corner configurations at two ends of said front panel, each of said corner configurations consisting of a first section extending from said hinge in the plane of said front panel and a second section extending in a perpendicular relation therefrom so as to subtend a 90° angle at each said corner, an assembly flange on each said second section of said front panel projecting inwardly into said inter-

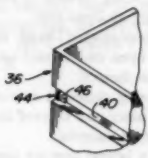
nal operative area of said structure, two corner configurations at two ends of said rear panel consisting of a first section extending in the plane of said rear panel and a second section extending in a perpendicular relation therefrom to subtend an angle of approximately 90° at each said corner, an assembly flange on each said second section of said rear panel projecting inwardly into said internal operative area of said structure, a roof attached at least to said front and rear panels serving as both a cover and closure for said internal operative area, said roof having an assembly flange on said front and rear ends thereof projecting inwardly into said internal operative area of said structure, and two rectangular-shaped side panels each having along the long-dimensioned edges thereof an assembly flange projecting inwardly into said internal operative area, whereby in the assembly of said structure the aforementioned assembly flanges of said front, rear, side and roof panels are adapted to be placed in adjacent relation to each other and thereby have an internal operative location within said structure, and bolt means and the like are operative to interconnect said assembly flanges to each other to thereby correspondingly interconnect said front, rear, side and roof panels into said unitary structure while minimizing such access to said bolt means as might result in the unauthorized disassembly of said structure, and a forwardly extending overhang in said roof to both serve as a weather barrier and to project into the removal path of the hinge pin of said hinge and thereby contribute to obviating the removal of said hinge pin.

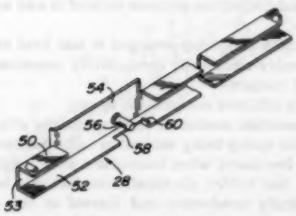
4,453,790

CABINET DRAWER STOP ASSEMBLY

Joel B. Cohen, St. Davids, and Matthew D. Marhefka, Southampton, both of Pa., assignors to Shell Containers, Inc. (PA), Ambler, Pa.

Filed Sep. 29, 1982, Ser. No. 426,352
Int. Cl.³ A47B *88/16*
U.S. Cl. 312—348 **6 Claims**





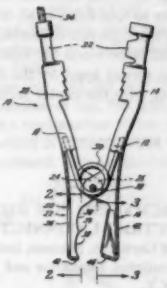
1. A cabinet having at least one moveable drawer comprising a cabinet frame supporting a pair of substantially horizontal runners, a drawer having a groove on the outer surface of opposite side walls, each runner being received in one of said grooves, a first limit stop on at least one of the runners and adapted to cooperate with a mating second limit stop on the drawer adjacent the rear end of the groove associated with said one runner for preventing the drawer from being inadvertently completely pulled out, a third limit stop comprising an upwardly extending projection on the bottom of said one runner for cooperation with the second limit stop when sufficient upward force is applied to the drawer to cause the first limit stop to fail to contact or to skip past, the second limit stop, said third limit stop being below the elevation of said first limit stop and longitudinally spaced therefrom.

4,453,791

BOOSTER CABLE CLAMP FOR SIDE TERMINAL AND STANDARD BATTERY POSTS

James A. Ledbetter, Aurora, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 17, 1982, Ser. No. 419,287
Int. Cl.³ H01R *11/24, 27/00*
U.S. Cl. 339—29 B **8 Claims**



1. An electrical connector for engaging a battery terminal, comprising;

(a) a first member having a handle and a first jaw for selectively engaging both a top-mount post-type battery terminal and a side-mount bolt-type battery terminal;

(b) a second member pivotally mounted to said first member, having a handle, a second jaw for engaging a top-mount post-type battery terminal, and a bolt-type battery terminal engaging surface having a closed through slot therein for receiving and engaging therein the head portion of a side-mount bolt-type battery terminal bolt, and for engaging a side-mount bolt-type battery terminal; and

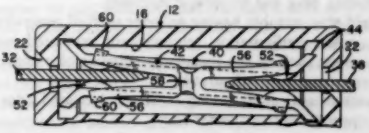
(c) spring means for urging said first and second jaws toward each other.

4,453,792

HIGH CURRENT DRAWER CONNECTOR

Edward J. Bright, Elizabethtown, and William V. Pauza, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 20, 1982, Ser. No. 419,659
Int. Cl.³ H01R *13/18*
U.S. Cl. 339—64 R **2 Claims**



1. A high current drawer connector, comprising:

a. a housing having a compartment with slots through each endwall providing access thereinto; and

b. a contact unit positioned in the compartment and adapted to receive tab terminals through the slots for electrical connection therewith, said unit comprising:

i. a pair of identical blades, each having an intermediate section with a raised contact surface on an inner side and with the ends of the blades being bent obliquely outwardly from the plane of the intermediate section,

the two blades being placed together with the inner sides facing each other and the raised contact surfaces in abutting relation, and the bent-out ends cooperating to form a beveled entrance into the facing inner sides; and

ii. a pair of resilient, elongated spring members, each spring member having a set of parallel, spaced-apart arms attached to and extending from opposite sides of a center section, and with a finger extending from the side of each arm adjacent the free end thereof so that the fingers on each set of parallel arms define a U-shape clip, said spring members being positioned along the opposing edges of the two blades with the fingers extending down the outer sides to hold the blades resiliently together so that upon a tab terminal entering the compartment through one of the slots, the tab terminal can be inserted in between the raised contact surfaces, the blades can spread apart by the arms pivoting about the attachment with the center section.

4,453,793

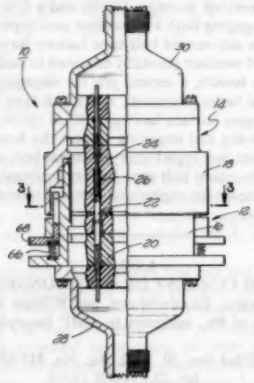
LOCKING MECHANISM FOR RECTANGULAR ELECTRICAL CONNECTOR

George J. Panek, and Gerald R. Nieman, both of Phoenix, Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,300

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—75 M **17 Claims**



1. An electrical connector comprising:

mating plug and receptacle members;

said plug member having an inner shell of generally rectangular configuration telescopically mounted within an outer shell of the receptacle member of complementary rectangular configuration;

each of said shells having a pair of elongated sides and opposed, relative shorter ends;

a groove formed in the outer surface of each side of said inner shell extending lengthwise of said side;

a matching groove formed in the inner surface of each side of said outer shell, said grooves in said inner shell being aligned with said grooves in said outer shell when said plug and receptacle members are fully mated;

an elongated wire positioned in each of said inner shell grooves; and

actuating means for shifting each of said wires outwardly to become partially lodged into the outer shell grooves to thereby lock said plug and receptacle members together.

4,453,794

FUSE HOLDER, ESPECIALLY FUSE HOLDER FOR ELECTRICAL DEVICES

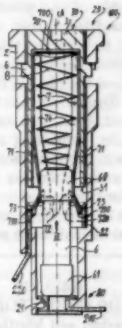
Peter Wallner, Kriens, and Peter Hollenstein, Lucerne, both of Switzerland, assignors to H. Schurter AG, Lucerne, Switzerland

Filed Jul. 27, 1982, Ser. No. 402,308

Claims priority, application Switzerland, Jan. 13, 1982, 178/82

Int. Cl.³ H01R *13/68*

U.S. Cl. 339—90 F **12 Claims**



1. A fuse holder comprising:

a socket member extending along a predetermined lengthwise axis;

said socket member being formed of electrically insulating material and having an open end;

a substantially tubular-shaped head member removably inserted into said open end of said socket member along the lengthwise axis thereof;

said head member being closed at an outer end thereof and being open at an inner end thereof and being formed of electrically insulating material;

a base contact and a lateral contact containing outwardly directed connection portions secured in said socket member;

a connection conductor arranged in said head member and releaseably electrically conductively connected with the lateral contact;

an axially effective compression spring;

said connection conductor and said axially effective compression spring being secured in said head member such that a fuse insert, when located in a work position thereof in the fuse holder, electrically conductively bears at one electrically conductive end thereof at the connection conductor and under the action of said compresaion spring bears by means of a further electrically conductive end thereof at the base contact;

said connection conductor being formed from a spring metal and defining a substantially U-shaped bracket member having a web portion and leg members;

said web portion extending transversely with respect to the lengthwise axis of the socket member and said leg members protruding from said web portion; and

each leg member extending at an inclination inwardly from the web portion towards an inner contact location for a related end of the fuse insert and from that location extending outwardly towards and frictionally engaging an outer contact area at the inner side of the lateral contact.

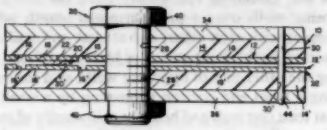
4,453,795
CABLE-TO-CABLE/COMPONENT ELECTRICAL PRESSURE WAFER CONNECTOR ASSEMBLY

Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 636,504, Dec. 1, 1975, abandoned. This application Jul. 7, 1981, Ser. No. 520,791

Int. Cl.³ H01R *13/621*; H05K *1/09*

U.S. Cl. 339—92 M **19 Claims**



18. An electrical connector assembly comprising:

first and second members having respective means defining pairs of mateable contact pads;

means securing said members and said pairs of contact pads together in electrical contact;

compressible means sandwiched between said securing means and said first member and positioned at least in line with said mateable contact pads for evenly distributing any uneven forces therebetween;

means coupled to said securing means for restricting compression of said compressible means; and

resilient means coupled to said securing means and exerting a resilient force on said members for ensuring complete contact between all said contact pads.

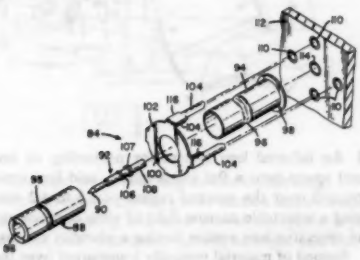
4,453,796
COAXIAL CONNECTOR PLUG

Kevin T. Monroe, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 390,427, Jun. 21, 1982, Pat. No. 4,412,717. This application Sep. 22, 1983, Ser. No. 534,846

Int. Cl.³ H01R *17/18*

U.S. Cl. 339—177 R **9 Claims**



1. A coaxial connector of the jack type adapted to electrically connect with a coaxial plug connector, comprising:

a metal tubular member having a flange at one end;

a dielectric member disposed along said tubular member and having a bore extending therethrough;

means provided by said tubular member and said dielectric member securing said dielectric member within said tubular member;

a center contact member having a first section disposed along said bore and a second section extending outwardly from an inner end of said dielectric member;

means provided by said first section of said center contact member securing said center contact member in said bore, said tubular member with said dielectric member secured therein and said center contact member secured in said bore defining a coaxial contact assembly;

an outer contact member has an opening through which said coaxial contact assembly extends with said flange engaging and being electrically connected to said outer contact member; and

contacts extending outwardly from said outer contact member and extending substantially parallel with said second section of said center contact member but spaced therefrom.

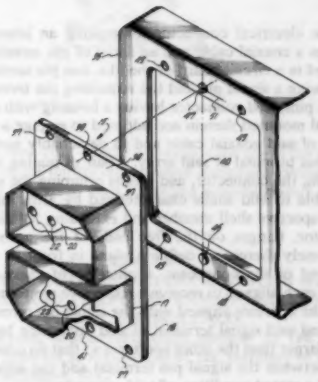
4,453,797
AVIONIC ELECTRICAL CONNECTOR MOUNTING APPARATUS

Robert A. Hollingsead, LaHabra, and Clyde R. Pryor, Anaheim, both of Calif., assignors to Hollingsead International Inc., Santa Fe Springs, Calif.

Continuation of Ser. No. 252,361, Apr. 9, 1981, abandoned, which is a continuation of Ser. No. 118,481, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 878,901, Feb. 17, 1978, abandoned, which is a continuation of Ser. No. 718,979, Aug. 30, 1976, abandoned. This application Jul. 16, 1982, Ser. No. 398,861

Int. Cl.³ G12B *9/10*

U.S. Cl. 339—132 B **5 Claims**



1. In an avionic racking system having an electrical connector shell member defining spaced attachment apertures and a connector mounting plate member defining a tray mounting surface and a plurality of attachment apertures which match the attachment apertures in the connector shell, means for accurately aligning an electrical connector shell with respect to the tray mounting surface, comprising:

a first alignment projection rigidly affixed to either said shell member or said mounting plate member, said first alignment projection arranged to mate with a first alignment aperture on the opposite member, said first alignment aperture being displaced from the attachment apertures, said first alignment projection and first alignment aperture coacting to restrain movement of the connector shell with respect to the mounting plate along either of two perpendicular axes in a plane perpendicular to the axis of said first projection; and

a second alignment projection rigidly affixed to either said shell member or said mounting plate member, said second alignment projection arranged to mate with a second alignment aperture on the opposite member, said second alignment aperture being displaced from the attachment apertures, said second alignment projection having a noncircular cross section and arranged to mate with said second alignment aperture so that its greatest cross-sectional dimension is perpendicular to the axis along which

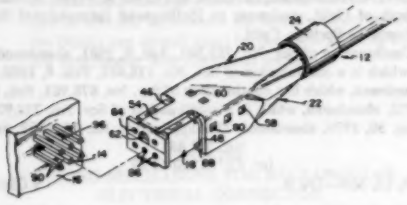
said first alignment projection restrains movement of the connector shell, thereby precisely locating the connector shell with respect to the mounting plate in a direction perpendicular to a line drawn between the projections.

4,453,798

SHIELDED CABLE ON COAXIAL CONNECTOR

John C. Asick, Harrisburg; John M. Landis, Camp Hill, and Clair W. Snyder, Jr., York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 18, 1982, Ser. No. 389,745
Int. Cl.³ H01R *13/506, 13/648*
U.S. Cl. 339—143 R **3 Claims**



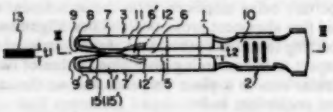
1. An electrical connector for making an interconnection between a coaxial cable and an array of pin terminals fixedly mounted in a circuit board or the like, one pin terminal of said array being a signal pin and the remaining pin terminals being ground pins, said connector having a housing with at least one terminal mounted therein and adopted to engage a signal conductor of said coaxial cable and to detachably mate with the signal pin terminal of said array, a pair of mating metal shells enclosing the connector, and means crimping the shielding of said cable to said shells characterized by arms integral with each respective shell member and extending forwardly of the connector, flanges on the free ends of the arms extending transversely thereto to define a plane in front of the mating front end of the connector, a plurality of apertures in said flanges each aligned to receive a respective pin terminal of said array, the aperture aligned with the signal pin terminal of said array and said signal terminal of said connector being significantly larger than the other apertures so that no contact will be made between the signal pin terminal and the adjacent metal shell in a mated condition of said connector.

4,453,799

FEMALE ELECTRIC CONNECTOR

Nori Inoue, Suzuka, Japan, assignor to Tokai Electric Wire Company Limited, Yokkaichi, Japan

Filed May 17, 1982, Ser. No. 378,721
Claims priority, application Japan, Feb. 10, 1981, 56/17430
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—256 SP **3 Claims**



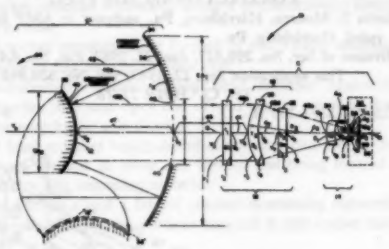
1. A female electric connector having an electric wire connecting portion and a receptacle portion connected to the front side of said electric wire connecting portion, wherein the receptacle portion includes: a bottom wall connected to the front end of said electric wire connecting portion and extending forwardly therefrom; a pair of side walls standing substantially upright from both side edges of said bottom wall; an upper wall including a pair of upper wall parts extending from the upper edges of both side walls toward each other and opposing to said bottom wall, said upper wall, side walls and bottom wall having substantially same length and cooperate to define therewithin a space of substantially rectangular cross-section, said side walls constituting a first pair of opposing walls of said receptacle portion while said bottom wall and said upper wall constituting a second pair of opposing walls of said receptacle portion; a pair of slits formed in either one of said first pair of opposing walls and said second pair of opposing walls and extending rearwardly from the front ends of said opposing walls over a predetermined length substantially in alignment with each other; and at least one resilient contactor connected to the front end of at least one of said walls constituting the other pair of opposing walls, said resilient contactor having a front end portion projecting by a small length from said at least one wall and being bent inwardly of said receptacle portion, and a main portion having a large length and extending longitudinally and rearwardly into said space in said receptacle portion, said resilient contactor being adapted to make, when a male contactor is inserted into said slits, a resilient contact with said male electric connector to hold the same stably in said slits.

4,453,800

SELECTABLE FIELD-OF-VIEW INFRARED LENS

Thomas P. Fjeldsted, West Covina, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 17, 1981, Ser. No. 293,763
Int. Cl.³ G02B *13/14*
U.S. Cl. 350—1.4 **6 Claims**



1. An infrared lens system for projecting an image from object space onto a flat image plane, said lens system being corrected over the spectral region of 3.3 to 4.2 microns and having a selectable narrow field of view comprising:

an objective lens system having a plurality of lens elements formed of material optically transparent over the spectral region of 3.3 to 4.2 microns, said plurality of lens elements being coaxially aligned and adapted to receive light from object space and to form an inverted sharply focused image on said flat image plane,

a selectable afocal telescope, said selectable afocal telescope being in select field of view determining relation with said objective lens system, whereby upon selection, said selectable afocal telescope cooperates with said objective lens system to provide an inverted sharply focused image on said flat image plane, said infrared lens system thereby having a narrow field of view;

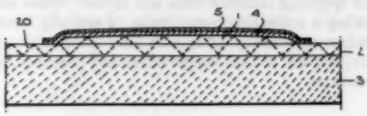
said objective lens being adapted to form an inverted sharply focused image on said flat image plane upon non-selection of said selectable afocal telescope, said infrared lens system thereby having a wide field of view.

4,453,801

PROTECTED LUNEBURG LENS

Carl M. Verber, and James R. Busch, both of Columbus, Ohio, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,471
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.12 9 Claims



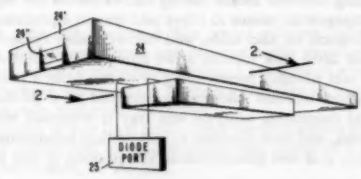
1. A protected Luneburg lens device comprising:
a Luneburg lens overlay formed on an optical waveguide, said overlay being of a material having a refractive index higher than that of said waveguide; and
a protective coating on said overlay for protecting said material from atmospheric influences.

4,453,802

EVANESCENT-WAVE COUPLING DEVICE

William B. Bridges, Altadena, and Adrian E. Popa, Newbury Park, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 26, 1981, Ser. No. 315,357
Int. Cl.³ G02B 5/172; H01P 1/00
U.S. Cl. 350—96.15 6 Claims



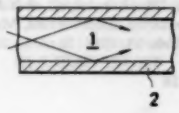
1. An evanescent-wave coupling device comprising:
a dielectric waveguide having a core section and a cladding section encompassing said core section except for a portion thereof, said waveguide having an input end and an output end;
a diode array disposed adjacent to said waveguide near the exposed portion of said core section at a proximity which allows for evanescent coupling of energy between said waveguide and said diode array;
first means coupled to the input end of said waveguide for coupling first signals thereto;
diode control means coupled to said diode array for coupling second signals to or from said diode array, said diode control means comprising a choke and delay-line arrangement to phase match the diode signals, which arrangement is coupled to said diode array and which allows said diode control means to apply a low frequency signal to said diode array; and
second means coupled to the output end of said waveguide for coupling third signals into or out of said waveguide.

4,453,803

OPTICAL WAVEGUIDE FOR MIDDLE INFRARED BAND

Takehiko Hidaka, Ibaraki; Takitaro Morikawa, Sayama; Junichi Shimada, and Ken Kumata, both of Ibaraki, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 371,809
Claims priority, application Japan, Jun. 26, 1981, 56-99525; Dec. 14, 1981, 56-201180
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.32 3 Claims



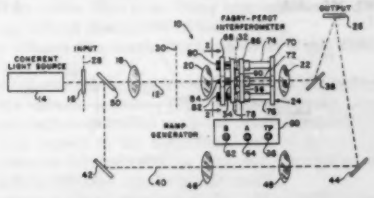
1. In a hollow-core optical waveguide for use in the middle infrared band, the improvement which comprises having a clad part thereof formed of glass consisting preponderantly of germanium dioxide.

4,453,804

REAL-TIME OPTICAL FILTERING SYSTEM WITH SPATIAL AND TEMPORAL ENHANCEMENT OF VISUAL INFORMATION

David W. Evans, Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 6, 1982, Ser. No. 337,349
Int. Cl.³ G02B 27/46
U.S. Cl. 350—162.12 6 Claims



1. In a method of real-time coherent optical filtering of visual imagery including the steps of coherently projecting a visual target image of an input, transmitting said visual target image along a first optical path from said input, filtering said target image in said first path to produce a filtered target image having a predetermined bandwidth of spatial frequency information, and projecting said filtered target image from said first path to an output, the improvement which comprises the steps of:
(a) transmitting said visual target image from said input to along a second optical path being aligned generally parallel to said first path;

(b) projecting said visual target image in an unfiltered condition to said output for producing spatial enhancement of said filtered target image at said output; and

(c) flickering said filtered target image for producing temporal enhancement of said filtered target image at said output, whereby said spatial and temporal enhancement of said filtered target image improves real-time detection and identification thereof by an observer.

4,453,805

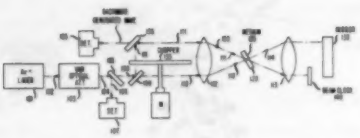
OPTICAL GRATING USING A LIQUID SUSPENSION OF DIELECTRIC PARTICLES

Arthur Ashkin, Rumson; Peter W. Smith, Colts Neck, and Walter J. Tomlinson, III, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1981, Ser. No. 236,031

Int. Cl.³ G02B 5/18

U.S. Cl. 350—162.24 6 Claims



1. Apparatus comprising an optically responsive medium and means for generating at least two beams of coherent radiation, said beams directed so as to intersect and form a standing wave pattern having a period Λ in said optically responsive medium characterized in that said optically responsive medium is a colloidal suspension of dielectric particles in a liquid medium, said dielectric particles and said liquid medium having different indexes of refraction, the diameter of said particles being less than or approximately equal to said period Λ, said dielectric particles being responsive to said standing wave pattern so that said dielectric particles are arranged substantially into a grating by said at least two beams of coherent radiation.

4,453,806

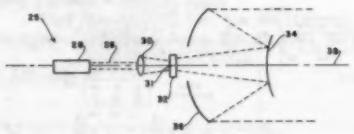
EYE SAFE LASER TRANSMITTER

Raymond V. Wick, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 13, 1982, Ser. No. 339,261

Int. Cl.³ G02B 5/02

U.S. Cl. 350—431 4 Claims



1. An eyesafe laser transmitter apparatus for converting a very high intensity spatially coherent laser beam into a high intensity beam of spatially incoherent radiation having a sufficient energy density to be useful while capable of being focused to a finite image on the retina of the eye rather than a diffraction limited spot, said apparatus comprising:

a laser that generates a beam of high energy spatially coherent laser radiation,

transmissive optical lens means positioned adjacent said laser and in the path of said laser beam for imaging said laser beam,

diffuser means for forming a high damage threshold diffuser surface to convert a beam of high energy spatially coherent radiation into a high intensity beam of spatially incoherent radiation while maintaining the polarization, amplitude and frequency characteristics of the laser beam, and controlling the angular divergence, said diffuser surface being positioned so as to have the laser beam imaged thereon by said optical lens, and

collimating means positioned adjacent said diffuser means for receiving radiation from said diffuser means and providing a collimated output beam of spatially incoherent radiation, whereby an eyesafe laser transmitter satisfactory for use in laser rangefinders and communicators is provided.

4,453,807

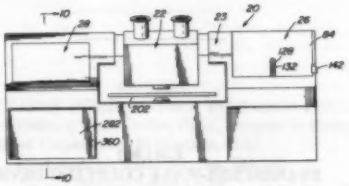
SYSTEM FOR HANDLING SLIDES

Albert A. Faulkner, 160 Arden Rd., Conshohocken, Pa. 19428, and John C. Bouton, 22 Regina Pl., R.D. 4, Doylestown, Pa. 18901

Filed Jun. 17, 1981, Ser. No. 274,690

Int. Cl.³ G02B 21/26

U.S. Cl. 350—529 34 Claims



1. A system for receiving a horizontally disposed tray having at least one specimen-bearing slide therein and for dispensing said tray into a storage container, said tray comprising a generally planar member having engagement means comprising a row of plural, longitudinally disposed notches, said system including tilt-table means having carrier means for engaging said engagement means to move said tray to a predetermined idle position on said table, said carrier means comprising a toothed drive disk located at an intermediate point on said table, said tilt-table means being pivotable from a horizontal orientation wherein said tray is received to a substantially vertical orientation wherein said tray is dispensed into said container, said table pivoting to said vertical orientation when said tray is at said predetermined idle position of said table.

4,453,808

APPARATUS FOR DETECTING THE POSITION OF A PATIENT'S EYE IN OPHTHALMOLOGIC INSTRUMENTS

Susumu Takahashi; Yasuo Kato; Yoshinori Oana, and Yoshiyuki Hatano, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Jun. 22, 1982, Ser. No. 390,978

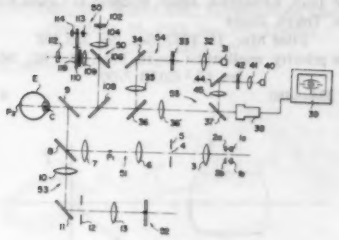
Claims priority, application Japan, Jun. 25, 1981, 56-98927; Jun. 25, 1981, 56-98928

Int. Cl.³ A61B 3/14

U.S. Cl. 351—208 5 Claims

1. An apparatus for detecting a position of a patient's eye with respect to an ophthalmologic instrument, comprising a source of light for projecting a beam of light along an optical axis toward said eye, lens means for imaging the light beam reflected at a front portion of said eye, means for causing the light beam from said imaging means to scan at least in one direction, and means for detecting position of said light source

by sensing the position of said light beam transmitted through said scanning means and providing a signal which can be used



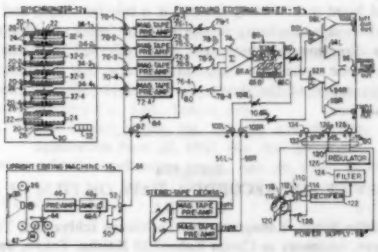
to detect the position of said eye with respect to said ophthalmologic instrument along the optical axis.

4,453,809

SOUND MIXING SYSTEM FOR FILM SOUND EDITING

James W. Hill, and Eugene N. Finley, both of 346 Corte Madera Ave., Corte Madera, Calif. 94925

Filed Aug. 5, 1981, Ser. No. 290,349
Int. Cl.[3] G03B *31/00*
U.S. Cl. 352—11 11 Claims



1. A separately-packaged film sound editorial mixer for mixing audio signals from one or more audio signal sources such as a sound synchronizer having a plurality of magnetic tape playback heads which provide a plurality of low level audio signals, said mixer including,

a plurality of low level audio signal input terminals adapted for connection to magnetic playback heads of a sound synchronizer, or the like,

a plurality of magnetic tape preamplifiers connected to said low level audio input terminals for preamplification of low level input signals supplied thereto,

a first summing amplifier,

means including a plurality of individual manually controlled attenuator means for connecting the preamplifier outputs to inputs of said first summing amplifier,

left and right channel amplifiers,

means for connecting the output from said first summing amplifier to inputs of said left and right channel amplifiers whereby separate left and right channel audio signals are provided at the outputs of said left and right channel amplifiers, and

a power supply for said mixer comprising:

a three-prong plug having a pair of power terminals and a ground terminal adapted for connection with a three terminal ac power outlet which includes a pair of power terminals and a power ground terminal,

a transformer having a primary winding connector to the power terminals of said three-prong plug, and a center-tapped secondary winding,

a rectifier connected to the secondary winding for conversion of the secondary winding output to dc voltage for powering mixer components,

means for connecting the secondary winding center tap to mixer components to provide a common ground, and

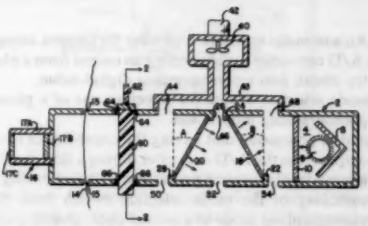
a switch movable between switch open and closed positions for selectively connecting the secondary winding center tap to said ground terminal of said three-prong plug to prevent the flow of ground loop currents in the switch open position and for connection of the common ground to said power ground in the switch closed position.

4,453,810

FILM TRANSPARENCY PROJECTOR

Yoram Curiel, Littleton, Colo., assignor to Foto Resources, Lakewood, Colo.

Filed Sep. 16, 1981, Ser. No. 302,957
Int. Cl.[3] G03B *21/16*
U.S. Cl. 353—55 13 Claims



1. A film transparency projector comprising:

a housing,

illumination means for projecting light through a film transparency,

lens means disposed in spaced relationship with respect to said illumination means,

infrared filter means for resisting passage of infrared radiation from said illumination means to said film transparency,

ultraviolet filter means for resisting passage of ultraviolet radiation from said illumination means to said film transparency,

said ultraviolet filter means including a filter member composed of an acrylic material having an ultraviolet absorbing additive for converting ultraviolet ray energy emitted by said illumination means into molecular motion which serves to dissipate such energy,

said ultraviolet filter means being removable from said housing without disassembly of said housing,

said infrared filter means being spaced from said ultraviolet filter means,

said infrared filter means having at least one generally plate-like infrared reflective filter member disposed generally angularly with respect to a plane oriented perpendicularly with respect to the longitudinal axis of said projector, whereby infrared radiation from said illumination means will be reflected angularly rearwardly,

a transparent head resisting member interposed between said illumination means and said infrared filter means,

said infrared filter means being disposed between said heat resisting member and said ultraviolet filter means,

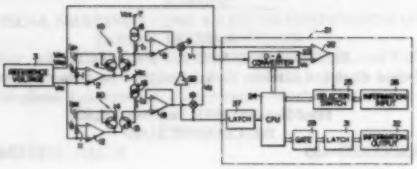
said housing having openings for permitting a film transparency to be disposed in projecting position; and

vent means for exhausting air from said housing whereby said heat resisting member will resist exposure of said filters and said film transparency to heat, said infrared filter will resist exposure of said ultraviolet filter means and said film transparency to infrared radiation and said utltraviolet filter means will resist exposure of said film transparency to ultraviolet radiation.

4,453,811
AUTOMATIC EXPOSURE CONTROLLER FOR A CAMERA

Masafumi Yamasaki, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Apr. 8, 1982, Ser. No. 366,581
Claims priority, application Japan, Jul. 7, 1981, 56-105841
Int. Cl.³ G03B 7/08
U.S. Cl. 354—412 4 Claims

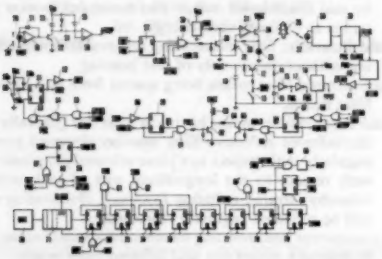


1. An automatic exposure controller for camera, comprising:
an A/D converter for converting an output from a photometry circuit into a corresponding digital value;
a mode selection switch for selecting one of a plurality of photographing modes; and
a central processing unit having the capability of storing an output from the A/D converter during a first photographing mode, the central processing unit responding to the switching of the mode selection switch from the first photographing mode to a second photographing mode by clearing the photometric information which had been stored during the first photographing mode, and then performing an arithmetic operation to determine an exposure period during the second photographing mode.

4,453,812
AUTO-FOCUS DEVICE FOR CAMERA

Ryoichi Suzuki, Kanagawa, and Ryuji Tokuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,861
Claims priority, application Japan, Aug. 26, 1981, 56-134443
Int. Cl.³ G03B 3/10, 7/093
U.S. Cl. 354—403 10 Claims

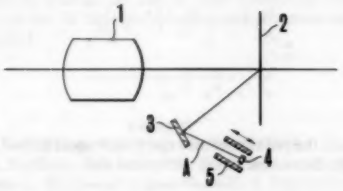


1. A focusing device including:
(a) a battery circuit;
(b) an auto-focus circuit responsive to current supply from said battery circuit to operate, said circuit producing an output signal representing a termination of a focusing operation; and
(c) prohibiting means for forcibly prohibiting the operation of said auto-focus circuit when said signal is not produced in a prescribed time after the initiation of the auto-focus operation.

4,453,813
PHOTOMETRIC DEVICE FOR SINGLE-LENS REFLEX CAMERA

Sadahiko Tsuji, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,295
Claims priority, application Japan, Mar. 24, 1981, 56-42771
Int. Cl.³ G03B 7/00
U.S. Cl. 354—480 4 Claims

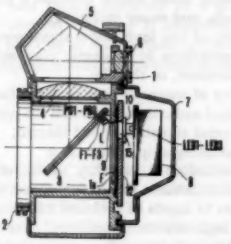


1. A photometric device for a photographic camera which allows photometry of light reflected from a film surface and comprises:
photometric means;
hood means for guiding light over a set photometric range from the light reflected from the film surface toward said photometric means;
said hood means being formed in a tubular shape; and
said hood means being supported to be freely movable along a direction in which said light reflected from the film surface comes into the hood means, so that the photometric range of the device is variable relative to the film surface.

4,453,814
DEVICE FOR RECORDING DATA ON FILM OF A CAMERA

Toshihiko Satoh, Kanagawa, and Toshikazu Ichiyanagi, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,415
Claims priority, application Japan, Dec. 15, 1980, 55-176668
Int. Cl.³ G03B 17/24
U.S. Cl. 354—107 9 Claims

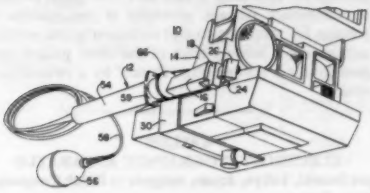


1. A data recording device for a camera which forms an image on an image plane comprising:
(a) a plurality of data light sources for emitting color lights differing from each other so as to record data figures on a predetermined portion of the image plane;
(b) detecting means for detecting the spectrographic characteristics of the image formed at the predetermined portion of the image plane; and
selecting means for causing the data light sources selectively to emit light on the basis of the detected spectrographic characteristics.

4,453,815
CAMERA HAVING A REMOTE CONTROL SHUTTER RELEASE ASSEMBLY

Robert W. Kain, 405 Miami Ave., Terrace Park, Ohio 45174

Filed Mar. 16, 1982, Ser. No. 358,595
Int. Cl.³ G03B 17/38
U.S. Cl. 354—269 4 Claims

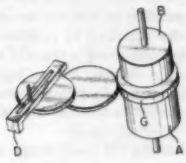


1. The combination of a camera which includes a body and a push button shutter release means slideably mounted on the body, a piston rod member mounted on the body and carrying a piston member, a cylinder slideably mounted on the piston member, means connecting the cylinder to the push button shutter release means, and means for supplying fluid under pressure to the cylinder to cause movement of the push button in a direction to cause shutter release of the camera.

4,453,816
METHOD AND MEANS FOR CONTROLLING THE APERTURE BLADES OF A CAMERA THROUGH PULSE MOTORS

Fumiaki Hiraike, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 258,658, Apr. 29, 1981. This application Nov. 29, 1982, Ser. No. 445,286
Claims priority, application Japan, Apr. 30, 1980, 55-57319
Int. Cl.³ G03B 9/02
U.S. Cl. 354—271.1 9 Claims



1. A method for controlling the movement of a set of aperture blades in the camera from the starting position of a stopping down operation to the aperture stop-down position by a predetermined number of unit pulses, which includes the steps of dividing the number of required unit pulses into two groups, one of which is a multiple of the other, and moving said blades into the desired position by applying the said two groups of pulses.

4,453,817
AUTOMATIC PHOTOGRAPHIC PROCESSING APPARATUS UTILIZING A MICROCOMPUTER

Warren P. Clark, 10 Evans Dr., Wilmington, Mass. 01887

Filed Nov. 15, 1982, Ser. No. 441,817
Int. Cl.³ G03B 3/08
U.S. Cl. 354—299 6 Claims

1. An automatic photographic paper and film developing apparatus comprising in combination:

a light tight drum, said light tight drum including a door means to provide access to the inside of said drum, said drum containing a reservoir means in the top of said drum and containing a drain means in the bottom of said drum,

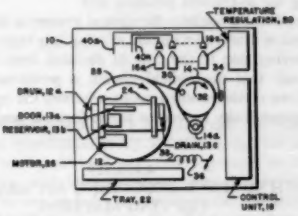
means for rotating said drum operatively connected to said drum,

means for tilting said drum, said drum being mounted on said tilting means in a horizontal position, said horizontal position being the normal position for said drum on said tilting means,

means for filling said drum with a chemical, said filling means containing a plurality of chemicals,

means for receiving the chemicals drained from said drum,

a temperature regulation means to control the temperature of said plurality of chemicals, and,

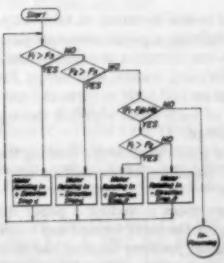


a control means to control the sequence of operations of said automatic photographic paper and film developing apparatus, said control means controlling said tilting means to tilt said drum to the vertical position to receive one of said plurality of chemicals, said control means activating said fill means to dispense one of said plurality of chemicals to said drum, said control means operating said rotating means, said control means stopping said rotating means and activating said tilt means to drain said chemical into said receiving means, said control means continuing said sequence of operations until the developing process is completed.

4,453,818
METHOD OF AUTOMATICALLY ADJUSTING FOCUS CONDITIONS

Asao Hayashi, Hachioji; Kenichi Oinoue; Masahiro Aoki, both of Tokyo; Junichi Nakamura, and Masatoshi Ida, both of Hachioji, all of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Dec. 2, 1982, Ser. No. 446,255
Claims priority, application Japan, Dec. 4, 1981, 56-195384
Int. Cl.³ G03B 3/10
U.S. Cl. 354—406 12 Claims



1. A method of automatically adjusting focus conditions comprising

receiving at least a part of an optical image formed on a predetermined focal plane by an optical system onto first and second light receiving means each including photocell

array arranged in the front and the rear of a surface conjugated to the predetermined focal plane and onto a third light receiving means arranged between the first and second light receiving means, respectively,

arithmetically operating outputs of first, second and third light receiving means in accordance with respective given evaluation functions thereby obtaining first, second and third evaluation values,

comparing first, second and third evaluation values with each other,

intermittently shifting or moving the optical system in the direction of optical axis with a first moving step in the case of decision from the compared result that the optical system is positioned within a predetermined range including the in-focused position, and

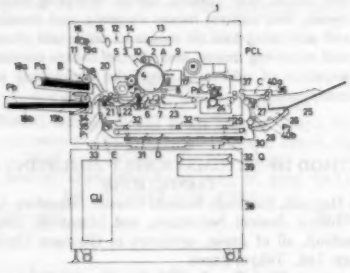
intermittently shifting the optical system in the direction of optical axis with a second moving step larger than the first moving step in the case of decision from the compared result that the optical system is positioned outside the above predetermined range, whereby the optical system is automatically moved to the in-focused position.

4,453,819

BOTH SURFACE RECORDING APPARATUS FOR COPYING MACHINE

Kenichi Wada, Sakai; Mikio Masui, Itami, and Masaya Ogawa, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1982, Ser. No. 399,967
Claims priority, application Japan, Jul. 30, 1981, 56-119930
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **3 Claims**



1. A recording apparatus including a printer body for recording images on both surfaces of paper sheets, which comprises:

paper feed means mounted on said body at one end thereof, means defining a paper transport passage for feeding the paper in one direction at a first predetermined speed to an image forming means, said image forming means being arranged on said body to form and record an image on one surface of each sheet supplied through said paper transport passage,

a turn-over guide portion for feeding the sheet after having been recorded on its one surface into the paper transport passage,

sheet return meas including a paper discharge section for discharging the sheet formed and recorded with the image at said image forming section, and means defining a return section of a predetermined length sufficient for returning a plurality of paper sheets formed and recorded with the image at the one surface thereof in a direction opposite said one direction to said turn-over guide portion from said paper discharge section, said paper discharge section including a discharged paper tray mounted on said body at an end opposite said one end thereof, and said sheet return means being devoid of any tray for stacking and accommodating therein one-surface copied sheets,

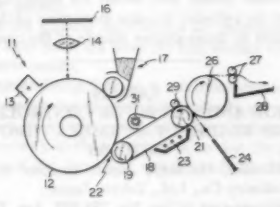
said sheet return means being provided as a unit selectively attachable or detachable with respect to said recording apparatus, and including a passage change-over means for guiding the sheet through change-over, either into a passage for discharging out of said apparatus or into another passage for returning to said turn-over guide portion, and a switch-back passage provided at one portion of the passage for returning to said turn-over guide portion, and exchanging a leading edge of the sheet guided into said passage for a trailing edge thereof by a switch-back system.

4,453,820

ELECTROSTATOGRAPHIC APPARATUS

Shigeru Suzuki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 108,986, Jan. 2, 1980, abandoned. This application Aug. 5, 1982, Ser. No. 405,477
Claims priority, application Japan, Jan. 25, 1979, 54-8065
Int. Cl.³ G03G *15/16*
U.S. Cl. 355—3 TR **10 Claims**



1. An electrostatographic apparatus including a dielectric member, imaging means for forming an electrostatic image on the dielectric member and developing means for applying a one component magnetic toner having low electrical resistivity to the dielectric member to develop the electrostatic image into a toner image, characterized by comprising:

first transfer means comprising a transfer member having a surface formed of a material having high affinity for the toner and means for lightly pressing said surface against the dielectric member to transfer the toner image to said surface;

heater means for heating the toner image on said surface to fusion; and

second transfer means for pressing a copy sheet against said surface to transfer the toner image to the copy sheet;

the transfer member comprising a layer having high thermal conductivity, the apparatus comprising cooling means for cooling the transfer member after transfer of the toner image to the copy sheet.

4,453,821

SET-UP RECALL APPARATUS

Donald W. Smith, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

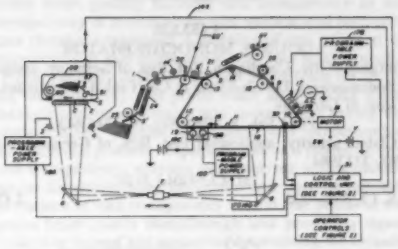
Filed Apr. 1, 1982, Ser. No. 364,390
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **6 Claims**

1. In a copier/duplicator having a keyboard capable when acutated by an operator to establish various set-up configurations so that the copier produces production runs in accordance with a selected set-up configuration of such copier/duplicator, set-up recall apparatus comprising:

(a) programmable non-volatile memory means;

(b) means coupled to said keyboard for storing in said non-volatile memory means when actuated by said operator

information which corresponds to at least two different set-up configurations of said copier/duplicator;



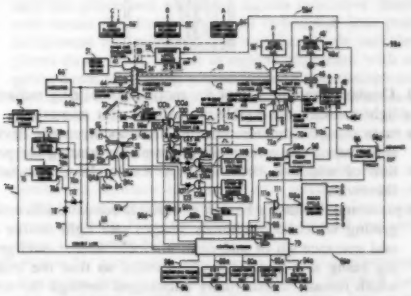
(c) means effective when actuated by said operator for selecting a desired one of said stored set-up configurations to configure said copier/duplicator in accordance with such selected configurations prior to a production run.

4,453,822

APPARATUS FOR PRODUCING MICROFORM RECORDS FROM MULTIPLE DATA SOURCES

Gary D. Lewis, St. Clairs Shores, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 29, 1979, Ser. No. 98,388
Int. Cl.³ G03B *27/52, 27/70*
U.S. Cl. 355—43 **27 Claims**



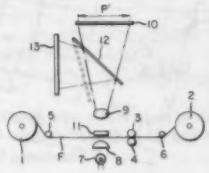
1. An apparatus for producing microform records from light reflecting hard copy wherein a light image reflected from the hard copy is reduced to micro-imaged size and applied at a film imaging station to film means which is photosensitive to an image by the light reflecting hard copy, said apparatus comprising a hard copy-receiving station including a platform occupying a given area which platform is to receive hard copy placed thereon, said platform being light colored and opaque to duplicate the light background of hard copy, image-reducing projection means for directing upon said film means a micro-image of the light reflected image from hard copy placed on said platform, a cathode ray tube on the side of said given area remote from said projection means, means for directing towards said area and into said projection means the light image on the screen of said cathode ray tube upon which is to appear a page of data to be recorded on a microfilm frame, and platform support means for withdrawing said platform from said area when it is desired to project the image on the cathode ray tube face upon said film means so that the image on the screen thereof is directed through the opening previously occupied by said platform.

4,453,823

METHOD OF STOPPING A FILM

Yasutoshi Sugita, Ichikawa, and Yoshio Ando, Chigasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,056
Claims priority, application Japan, May 25, 1981, 56-79022; May 25, 1981, 56-75622[U]
Int. Cl.³ G03B *27/52, 25/32, 23/12*
U.S. Cl. 355—50 **5 Claims**



1. A process for positioning a film at a copying position to copy a desired information group of the film, the film having a plurality of frames, divided into frame groups, each frame having a portion with information recorded thereon and each frame group having an index at a position corresponding to a first frame of each frame group, the film being along a path which has an index detecting means provided at a position where the index passes and has first and second detecting means provided spaced-apart at positions where the frames pass in a feeding direction of the film, the index detecting means being positioned upstream of the first and second detecting means with respect to a first feeding direction of the film so that the frames in a frame group pass the copying position successively from the first frame to the last frame in the first feeding direction of the film, the first and second detecting means being positioned downstream of the copying position with respect to the first feeding direction so that when said first detecting means detects the information recorded portion of a frame the second detecting means is located at a position to detect a clearance between said frame and an adjacent frame, said process including the steps of;

feeding the film, at the initiation of the copying operation, in the first feeding direction until detection of the last frame of the frame group on which information to be copied is recorded;

stopping the film when the index detecting means detects the index nearest to the last frame of the frame group;

feeding the film in a second feeding direction which is opposite to the first feeding direction until a predetermined length is fed after said first detecting means detects the information recorded portion of the last frame and simultaneously said second detecting means detects the clearance between the frames; and then

stopping the film,

whereby the copying operation is commenced from the last frame of the frame group.

4,453,824

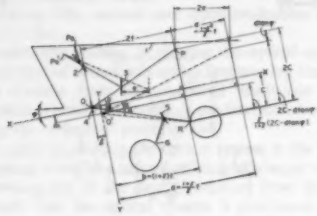
VARIABLE MAGNIFICATION COPYING APPARATUS

Hiroyuki Miyake, Inagi; Seiji Sagara, Kawasaki; Kazuo Kagiura; Nobukazu Sasaki, both of Tokyo, and Takaji Yonemori, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 160,172, Jun. 17, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,307
Claims priority, application Japan, Jun. 22, 1979, 54-78948; Aug. 28, 1979, 54-108642
Int. Cl.³ G03B *27/34, 27/70*
U.S. Cl. 355—57 **9 Claims**

1. A variable magnification copying apparatus comprising an original carriage, a first movable mirror movable parallel to said original carriage at a velocity V and located at the object

side and in the vicinity of said original carriage in the optical path, a second movable mirror movable at a velocity $(\frac{1}{4})V$ in the same direction as said first movable mirror and remote from said original carriage in the optical path, an in-mirror lens having its optical axis non-parallel to said original carriage, and a second movable mirror holding member and an in-mirror lens holding member supporting thereon said second movable



mirror and said in-mirror lens, respectively, and displaceable by predetermined amounts in predetermined directions during a magnification change such that the object point position of a principal light ray on said original carriage is maintained fixed and a constant angle is maintained between said original carriage and the optical axis of said in-mirror lens irrespective of the magnification change while the principal light ray at the object side is inclined with the change in magnification.

4,453,825

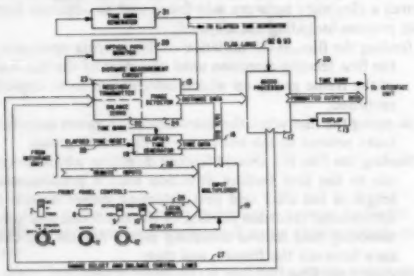
DISTANCE TRANSDUCER

Dean C. Buck; Richard E. Warren, both of Loveland; David E. Smith, Fort Collins, and David Rustici, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 101,376, Dec. 7, 1979, abandoned. This application Nov. 20, 1981, Ser. No. 323,605

Int. Cl.³ G01C *3/08*

U.S. Cl. 356—5 **27 Claims**



1. Apparatus for measuring and indicating the varying distance to a moving target and for indicating the instant in real-time when the target is at the indicated distance, the apparatus comprising:

first means for defining an interval during which a varying distance to a moving target is measured;

second means coupled to the first means for measuring the varying distance throughout the interval and for then subsequently indicating a distance, the indicated distance separable into at least a first component corresponding to the average distance to the moving target during the interval and a second component which is an error that through a constant K is proportional solely to the relative velocity between the target and the apparatus; and

time mark generation means coupled to the first means for producing a time mark signal having a transition offset from the middle of the interval by a constant amount determined by the constant of proportionality K, whereby the transition occurs at the instant in real-time when the varying distance to the target equals the indicated distance.

4,453,826

DOUBLE MONOCHROMATOR

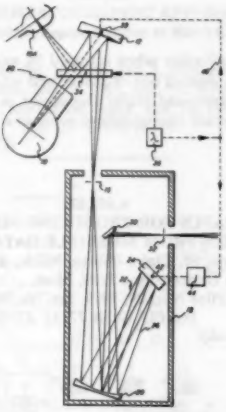
Wolfgang Witte, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,443

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113984

Int. Cl.³ G01J *3/18*

U.S. Cl. 356—333 **2 Claims**



1. Double monochromator for monochromatizing radiation of a light source; said double monochromator comprising:

a main monochromator, said main monochromator having an entrance slit, an exit slit and a planar grating the position of which is controlled by a sine drive associated therewith;

a pre-monochromator having a rotatable concave diffraction grating which continuously images said light source on said entrance slit of said main monochromator, said grating being non-symmetrically divided so that the image width remains substantially unchanged through the rotation thereof, said double monochromator having an operating range of wavelengths between from about 190 nm to about 900 nm; and

a linear wavelength drive associated with said pre-monochromator grating and being synchronously tuned with said sine drive of said main monochromator.

4,453,827

OPTICAL DISTORTION ANALYZER SYSTEM

John Taboada, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 28, 1981, Ser. No. 297,527

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—353 **9 Claims**

1. An optical distortion analyzer system for automatically quantifying the optical quality of a transparency comprising:

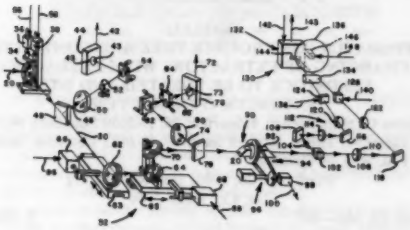
(a) means for supporting said transparency;

(b) means operably connected to said transparency supporting means for moving said supporting means and therefore said transparency about a vertical axis and a horizontal axis;

(c) means for providing a probe beam of electromagnetic

radiation in optical alignment with said transparency, said probe beam having a predetermined angular orientation in a predetermined direction and position in space, said probe beam passing through said transparency as said transparency is moved about said vertical and horizontal axes thereby establishing a plurality of test points at the intersection of said probe beam with said transparency;

(d) means optically aligned with said probe beam for receiving and analyzing said probe beam after having passed through said transparency, said probe beam having said predetermined angular orientation and predetermined direction and position in space altered as it passes through said transparency, wherein said analyzer means includes means for determining horizontal and vertical prismatic deviations of said transparency at said test points as said probe beam passes therethrough and providing signals indicative thereof and means for determining the cylindrical lens power component, spherical lens power component and principal meridian angle of said transparency at



said test points and providing signals indicative thereof, said means for determining said cylindrical lens power component and said principal meridian angle includes a photo diode array system in optical alignment with said probe beam after being passed through said transparency and means in optical alignment with said probe beam and positioned between said transparency and said photo diode array system for rotating the image axis of said probe beam after passing through said transparency;

(e) means in optical alignment with said probe beam and positioned between said image axis rotation means and said photo diode array system for eliminating lens power error resulting from the displacement of said test points along said probe beam axis; and

(f) means for processing said signals indicative of prismatic deviations, lens power components and meridian angle and correlating said prismatic deviations, lens power components and meridian angle with said plurality of test points on said transparency.

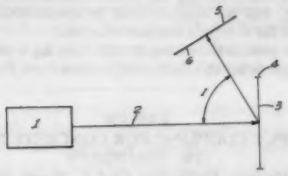
4,453,828

APPARATUS AND METHODS FOR MEASURING THE OPTICAL THICKNESS AND INDEX OF REFRACTION OF THIN, OPTICAL MEMBRANES

Ronald S. Hershel, Albany, Oreg., and Ray Winn, Studio City, Calif., assignors to Advanced Semiconductor Products, Inc., Santa Cruz, Calif.

Filed Dec. 2, 1981, Ser. No. 326,488
Int. Cl.³ G02B *11/06*
U.S. Cl. 356—357 **3 Claims**

1. A method comprising directing light onto a thin, optical membrane at one or more known angles of incidence, said membrane having a thickness in the range of about 0.5 to about 10 micrometers, said membrane being capable of being edge-supported; finding two consecutive null angles of incidence for said membrane; calculating the thickness t of said membrane from the expression: $t\sqrt{(\sin I2)^2-(\sin I1)^2}=(\lambda/2)\sqrt{k-1}$, where I2 and I1, are said two consecutive null angles of incidence for said membrane, λ is the wavelength of the incident light, and k is an assumed, even integer value, in quarter wavelengths of light, for the optical thickness of said membrane; then calculating the index of refraction N of said membrane from the calculated value of t and the assumed value of k in the



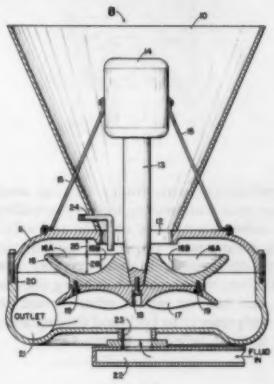
expression: $Nt=k(\lambda/4)$, where N is equal to the square root of the expression $N^2-(\sin I)^2$, I is I1 or I2, and N is the index of refraction for said membrane.

4,453,829

APPARATUS FOR MIXING SOLIDS AND FLUIDS

James W. Althouse, III, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 29, 1982, Ser. No. 426,320
Int. Cl.³ B01F *7/16*; B28C *5/00*
U.S. Cl. 366—13 **4 Claims**



1. An apparatus for mixing solid particles with a fluid composition, the apparatus comprising:

a hopper for containing the solid particles, the hopper communicates with a casing;

a drive shaft which extends into the casing;

a slinger member which is attached to the drive shaft;

the slinger member has a toroidal configuration, including a concave surface which faces toward the top of the casing;

the slinger member is interrupted by several blade members, the depth of each blade is the linear distance from the upper edge to the lowest point of each blade, the linear distance between the said upper edge of each blade member and the nearest opposite point on the flat surface of the casing defines a positive gap between the slinger member and the casing; and the linear distance of said positive gap is in the range of from about one-half the depth of each blade to about twice the depth of each blade;

an impeller member which is attached to the underside of the slinger member and to the drive shaft;

the impeller member has a vortex configuration, including a concave surface which faces toward the bottom of the casing;

the slinger member has a larger surface area than the impeller member;

the slinger and the impeller members are enclosed by the casing and said members are rotatable within the casing;
a drive means for rotating the drive shaft, the slinger member, and the impeller member;
an inlet conduit having one end in communication with the casing, and an opposite end in communication with a source for the fluid composition; and
an outlet port in the casing for discharging a mixture of the solid particles and fluid composition from the casing.

4,453,830

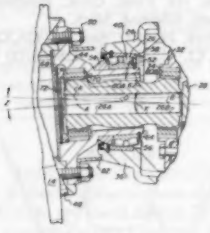
OUTPUT COUPLING FOR CONCRETE MIXER TR NSMISSION

James J. Jameson, Coffeyville; Fred L. Mount, Independence, and Joe L. Fernandez, Coffeyville, all of Kans., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 343,650, Jan. 28, 1982, abandoned, which is a division of Ser. No. 134,719, Mar. 27, 1980, Pat. No. 4,335,963. This application Feb. 16, 1983, Ser. No. 466,793

Int. Cl.³ B28C *5/42*

U.S. Cl. 366—63 **7 Claims**



1. In combination with rotary driving means, rotatably driven means, spherical bearing means journalling said driving and driven means for relative rotation and axial deflection of said driving means with respect to said driven means, the improvement comprising: a shaft drivably connecting said driving and driven means, said shaft being disposed through an opening in said bearing means wherein said shaft is axially deflectable with respect to both said driving and driven means in response to axial deflection therebetween.

4,453,831

MIXER WITH A FIXED DRUM

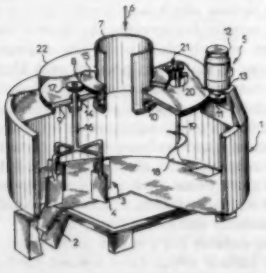
Jean Mahon, Bondues, France, assignor to Societe Anonyme Couvrot Laine & Cie, Croix, France

Filed Jul. 22, 1982, Ser. No. 400,962

Claims priority, application France, Jun. 4, 1982, 82 10270

Int. Cl.³ B28C *5/08*

U.S. Cl. 366—65 **5 Claims**



1. A mixer for mixing wet or dry mix constituents to mix concrete silica sand and the like comprising, a fixed drum, an upstanding central pipe mounted fixed defining a central opening at the top of said drum for introducing mix constituents into the interior of the drum, a ring gear disposed supported externally of the drum coaxial with the central pipe for rotation about the pipe and relative to the drum, a motor drive coactive with the teeth of said ring gear for driving it rotationally, a mixing arrangement interiorly of said drum having a depending shaft rotationally supported on the ring gear for rotation therewith, a fixed gear mounted externally of said drum coaxial with and on said pipe, a driven pinion gear on said shaft meshing with said fixed gear for driving said depending shaft rotationally about its axis as said gear transports the mixing arrangement in a circular path in said drum and relative to said fixed gear, and the motor drive having a drive motor, a speed reducer driven thereby, and a drive pinion gear driven by the speed reducer for rotationally driving the ring gear, whereby the mixing arrangement is transported along said circular path and simultaneously driven rotationally by the motor drive.

4,453,832

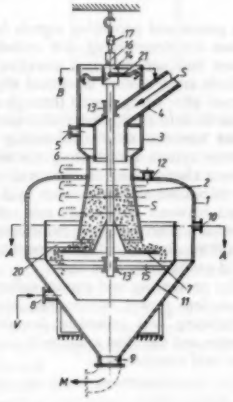
APPARATUS FOR TROUBLE-FREE AND CONTINUOUS CHARGING OF EXTRACTORS WITH EXTRACTION FEEDSTOCK TO BE TREATED AND WITH EXTRACTANT OR SOLVENT

Heinz O. Schumacher, Höperfeld 26, D-2050 Hamburg 80, and Heinz H. Thiem, Kleiner Sand 66, D-2082 Uetersen, both of Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 314,777

Int. Cl.³ B01F *5/04*

U.S. Cl. 366—167 **9 Claims**



1. An apparatus for continuous charging of extractors with extraction feedstock and extractant while a suspension of the reactants is formed in an oxygen-free environment without the occurrence of solvent vapors comprising a vessel having an upper portion and a lower portion, said upper portion having a cover provided with an opening, a tubular member positioned within said opening in said cover, said tubular member having a first portion within said vessel and a second portion extending above said cover, inlet means communicating with said second portion of said tubular member for feeding extraction material to said tubular member, a shaft rotatably mounted within said tubular member, said shaft having a disc secured to the lower end thereof proximate to the lower end of said first portion of said tubular member, inlet means in said lower portion of said vessel for introducing extractant into said vessel and outlet means below the extractant inlet means for removing the suspension formed by said extraction and said extractant from said vessel wherein a screen is provided within said

vessel and surrounds said disc, said screen being provided with a plurality of scrapers located above said disc.

4,453,833

MOVEMENT STRUCTURE FOR HAND DISPLAY TYPE ELECTRONIC WATCH

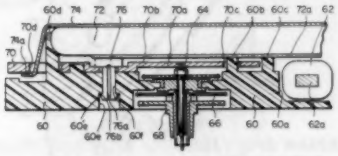
Mitsuo Saitoh, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,383

Claims priority, application Japan, Feb. 19, 1980, 55-20223[U]; Feb. 22, 1980, 55-22172[U]; Nov. 28, 1980, 55-170558[U]

Int. Cl.³ G04C *10/02*; G04B *29/02*

U.S. Cl. 368—88 **3 Claims**



1. A movement structure for an analog quartz timepiece powered by a coin-shaped lithium cell, comprising:

a baseplate formed of a synthetic resin and having a first central cutout portion and a second cutout formed therein;

a wheel train bridge secured to one side of said baseplate;

a drive coil disposed in said second cutout;

said baseplate further having support lugs formed extending from one side thereof upward beyond an upper surface of said wheel train bridge;

a wheel train block received in said first cutout portion and at least partially retained by said wheel train bridge, said wheel train block being provided with at least one pinion for mounting a time indicating hand on one end thereof, said pinion end being disposed protruding outward from said wheel train block on the opposite side of said baseplate from said side formed with said support lugs;

said lithium cell being located above said wheel train block and said drive coil so as to provide a space between said wheel train bridge and said drive coil, and said lithium cell, with a bottom surface of said cell being positioned and supported by said support lugs, said drive coil and said wheel train bridge lying entirely on one side of a plane containing said bottom surface.

4,453,834

ELECTRONIC TIMEPIECE WITH TEMPERATURE COMPENSATION

Fuminori Suzuki; Makoto Yoshida, and Shigeru Morokawa, all of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 394,198

Claims priority, application Japan, Jul. 3, 1981, 56-104228; Jul. 7, 1981, 56-105903

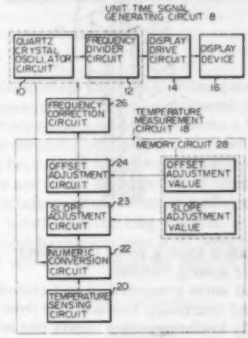
Int. Cl.³ G04B *17/12*

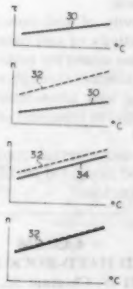
U.S. Cl. 368—201 **11 Claims**

1. An electronic timepiece powered by a battery, having unit time signal generating circuit means for generating a unit time signal, said unit time signal generating circuit means comprising a quartz crystal oscillator circuit for producing a timebase signal, said quartz crystal oscillator circuit displaying a quadratic relationship between ambient operating temperature and frequency of oscillation, and frequency divider circuit means coupled to receive said timebase signal for performing frequency division thereof to thereby generate a plurality of timing signals of different frequencies including said unit time signal, said electronic timepiece further comprising display drive circuit means coupled to receive said unit time signal, a display device driven by said display drive circuit means to display time information in accordance with said unit time signal, and temperature compensation means for compensating changes in the period of said unit time signal resulting from the effects of changes in the ambient operating temperature upon the oscillation frequency of said quartz crystal oscillator circuit, said temperature compensation circuit means comprising:

temperature measuring circuit means for sensing the ambient temperature of said quartz crystal oscillator circuit to produce temperature information indicative thereof, as a digital value, and;

frequency compensation means for producing the square of said digital value representing temperature information from said temperature measurement circuit means and for applying a value resulting from said squaring operation to





control the operation of said unit time signal generating circuit means such as to compensate the period thereof for the effects of ambient temperature variations;

said temperature measurement circuit means including temperature sensing circuit means for producing a temperature sensing signal whose repetition frequency varies in accordance with ambient temperature, slope adjustment circuit means for dividing the frequency of said temperature sensing signal by a factor which is determined in accordance with a preset value, numeric conversion means for converting an output signal produced by said slope adjustment circuit means to temperature information in digital form, and offset adjustment circuit means for effecting offset compensation of said digital temperature information from said numeric conversion circuit means.

4,453,835

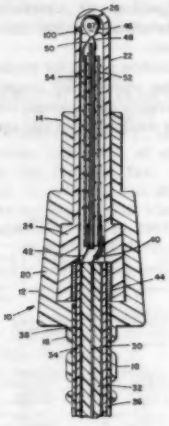
TEMPERATURE SENSOR

Burrell E. Clawson, 1844 3rd St. #B, and James Weigl, 1844 3rd St. #C, both of Riverside, Calif. 92507

Filed May 3, 1982, Ser. No. 373,835

Int. Cl.³ G01K *7/22, 1/08*

U.S. Cl. 374—185 **17 Claims**



1. A temperature sensing probe comprising:

a temperature sensing element;

a pair of lead wires connected to and extending from said element and electrically insulated one from the other;

an electrically insulating sensor sheath one end of which is closed and in which said sensor and said pair of lead wires are contained such that said sensor is in thermal contact with the interior of said one end of said sensor sheath;

an outer housing embracing all but said one end section of said sensor sheath;

thermal conductivity of said sensor sheath exceeding the thermal conductivity of said outer housing;

external connection means for making electrical connection to said sensing element through said lead wires;

means for biasing said temperature sensing element into engagement with the inner end of said one end section of the sheath; and

said sensor and said external connection means together forming a closed elongated air filled cavity in which said lead wires are enclosed.

4,453,836

SEALED HARD-ROCK DRILL BIT

Frank J. Klima, 1401 W. Chestnut St., Virginia, Minn. 55792

Filed Aug. 31, 1981, Ser. No. 297,944

Int. Cl.³ F16C *33/76;* **E21B** *10/22, 10/24*

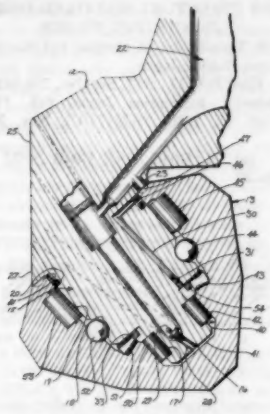
U.S. Cl. 384—94 **6 Claims**

1. In a lubricated rotary drill bit, comprising in combination;

a plurality of vertically disposed leg members, each of said leg members having a downwardly depending, circular, cutter receiving journal, said journal having a cylindrical outer end of reduced diameter and including a radially extending roller bearing surface and a ball bearing receiving groove adjacent said surface;

a like plurality of circular cutter means, each of said cutter means having an outer cutting surface and including a recess of complementary configuration rotatably disposed on said journals, said recess including a complementary disposed radially extending roller bearing surface intermediate the inner and outer ends, a ball bearing receiving groove adjacent the radially extending bearing surface, said surface and said groove being complementary disposed with respect to the corresponding portions of said journal;

a plurality of ball bearings disposed intermediate the ball bearing grooves; and



a plurality of roller bearings radially disposed intermediate the radial bearing surfaces on said journal and in said cutter.

4,453,837

THRUST BEARING FOR TURBOCHARGER

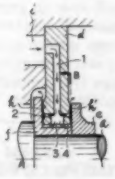
Masami Shimizu, Chiba, and Fusayoshi Nakamura, Ichikawa, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,733

Claims priority, application Japan, Dec. 10, 1981, 56-182974[U]

Int. Cl.³ F16C *32/06, 17/04*

U.S. Cl. 3.84—121 **6 Claims**



1. An improvement in a thrust bearing for a turbocharger having a thrust metal member secured to a bearing casing to be interposed between an oil thrower and a thrust bushing for carrying thrust loads at interfaces defined between the thrust metal member, the oil thrower and the thrust bushing, the thrust metal member having a lubricating oil passage defined therein to receive lubricating oil from a supply port and transfer that lubricating oil toward the thrust bushing, the improvement comprising:

(A) an oil reservoir means defined in the thrust metal member between the lubricating oil passage and the thrust bushing for receiving a supply of lubricating oil from the oil passage; and,

(B) a lubricating oil distributing means for conducting lubricating oil from said reservoir means to a plurality of locations on the interfaces, said lubricating oil distributing means including:

(1) a plurality of small diameter passage means fluidly connecting said oil reservoir means to the interfaces at

first locations for supplying a first quantity of lubricating oil to the interfaces; and

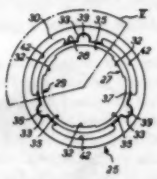
(2) a lubricating oil channel means located between the thrust metal member and the thrust bushing and fluidly connecting said oil reservoir means to the interfaces at second locations, with the thrust bushing closing one end of said channel means and the oil thrower closing the other end of said channel means so said channel means terminates at the interfaces for recirculating essentially all of the oil transferred to said lubricating oil channel means to the interfaces to be added to said first quantity of lubricating oil, said lubricating oil channel means being sized according to the size of said passage means for supplying enough lubricating oil to the interfaces to adequately and uniformly lubricate the interfaces.

4,453,838

TORSION DAMPING ASSEMBLY AND RADIALLY DEFORMABLE BEARING THEREFOR

Pierre Loizeau, Ville d'Avray, France, assignor to Valeo, Paris, France

Filed Dec. 22, 1981, Ser. No. 333,311
Claims priority, application France, Dec. 22, 1980, 80 27215
Int. Cl.³ F16C 27/02, 33/22; F16D 3/14
U.S. Cl. 384—125 6 Claims



1. A bearing radially interposable between two relatively rotatable parts, said bearing comprising an inner bearing surface engageable with a first relatively rotatable part, and an outer bearing surface engageable with a second relatively rotatable part, said inner and outer bearing surfaces being divided into at least two inner and outer bearing zones respectively, said inner and outer bearing zones being part of a single annular member, said inner bearing zones projecting radially inwardly of said annular member and said outer bearing zones projecting radially outwardly of said annular member, said inner and outer bearing zones being angularly offset relative to one another, relative radial play means being formed between each of said bearing zones of a selected one of said bearing surfaces and two circumferentially adjacent bearing zones of the nonselected bearing surface and between each of said bearing zones of the nonselected one of said bearing surfaces and two circumferentially adjacent bearing zones of the selected one of the bearing surfaces, relative radial play means comprising inwardly opening radial recesses formed between adjacent inner bearing zones and outwardly opening radial recesses between adjacent outer bearing zones, said radial play means permitting radial elastic deflection between said circumferentially adjacent bearing zones of said bearing surfaces and a radially outwardly extending rim integral with said annular member, wherein said rim comprises cutouts circumferentially extending to each side of said inner bearing zones radially locally disconnecting said rim with the rest of said annular member.

4,453,839

LAMINATED THERMAL TRANSFER MEDIUM FOR LIFT-OFF CORRECTION AND EMBODIMENT WITH RESISTIVE LAYER COMPOSITION INCLUDING LUBRICATING CONTACT GRAPHITE COATING

Hugh T. Findlay, and Keith A. Jones, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1982, Ser. No. 388,555
Int. Cl.³ B41J 3/20
U.S. Cl. 400—120 43 Claims

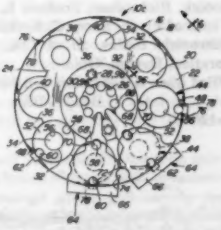
1. A transfer medium for thermal printing comprising a layer of marking material which is non-tacky and cohesive at ordinary room temperatures and which forms a bond for lift-off correction of thermal printing made from said transfer medium after having been raised to temperatures above ordinary room temperatures and below temperatures at which thermal printing by said transfer medium normally is effected, and a support layer upon which said marking material is supported, said transfer medium having a release layer comprising a low-melting material between said marking material and said support layer.

4,453,840

ACTUATOR FOR A PRINT WIRE

Ingard B. Hodne, 4048 Sunset La., Northbrook, Ill. 60062

Filed Dec. 6, 1982, Ser. No. 447,148
Int. Cl.³ B41J 3/12
U.S. Cl. 400—124 20 Claims



1. An actuator for a print wire having a printing end and a driven end, the wire being movable between non-print and print positions by the actuator, which comprises:

a ferromagnetic magnet frame which includes a bottom wall, a side wall extending away from the bottom wall, and a ferromagnetic pole extending away from the bottom wall in the same direction as the side wall; the side wall having a pair of inward extensions which extend along the bottom wall away from the side wall and towards points to either side of the pole; the thickness of the inward extensions varying along a direction generally perpendicular to the side wall; the inward extensions each having a lateral surface so shaped that a cavity is produced between the pole and the extensions, a wall of which cavity is at all points substantially equidistant from the pole; the side wall having a top planar surface co-planar with the top face of

the pole and with the top surfaces of the extensions; the top planar surface of the side wall being formed with a bevel at that part of the outer edge of the side wall which is the thinnest portion of the inward extensions, the innermost part of the bevel and the surface of the side wall defining a pivoting edge;

a planar ferromagnetic armature having opposed first and second surfaces and having a wide base and a substantially narrower finger which is abuttable with the driven end of the print wire; said pivoting edge defining a pivot line about which the base of the armature is pivotable between a non-print and a print position with the finger to the inside of the pivoting edge; the first surface of the base of the armature being pivoted on the pivoting edge so that the first surface of the armature overlies the co-planar surfaces of the side wall and the extensions and the pole face, that portion of the first surface of the armature inward from the pivoting edge being separated from the co-planar surfaces and from the pole face in the non-print position of the armature and contacting said co-planar surfaces and the pole face in the print position thereof;

an insulative bobbin with a selectively energizable electric coil thereon surrounding the pole and generally conformally held in the cavity;

means for holding the first surface of the armature at the base against the pivoting edge; and

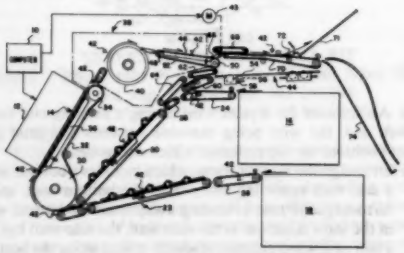
means for biasing the armature to its non-print position;

whereby energization of the coil pivots the armature on the pivoting edge against the biasing means due to attraction thereof by the co-planar surfaces and the pole to effect movement of the finger and of the driven end of the print wire so that the printing end of the print wire is impacted against a printing medium, the configuration of the extensions thereby serving to maximize the effect of the attractive force on the armature by maximizing the size of the co-planar surfaces overlain by the first surface of the armature while minimizing the size of the surface of the size wall in the vicinity of the pivoting edge.

4,453,841
DUPLEX PRINTING SYSTEM AND METHOD THEREFOR

Thomas W. Bobick, Richardson; Frederic L. Clark; Henry W. Jongerling, both of Plano; Barry C. Kockler, Lewisville, and Svetislav Mitrovich, Dallas, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,423
Int. Cl.³ B41J *3/02*
U.S. Cl. 400—126 **9 Claims**



1. In a printing system of the type in which print control information is stored in a memory, said print control information defining a plurality of document images which are to be duplex printed on a plurality of copy sheets, and in which a copy sheet path extends past a sheet supply, a print station, an inverter station, and to an output, the method of printing comprising the steps of:

sequentially supplying a plurality of copy sheets from said sheet supply to said sheet path,

sequentially transporting said sheets along said sheet path past said print station for printing selected ones of said document images on the first sides of said sheets,

sequentially retrieving said print control information from said memory in a first order to control printing on said first sides of said sheets,

sequentially printing selected ones of said document images on the first sides of said sheets,

sequentially inverting each of said sheets which is to be duplex printed and transporting each inverted sheet immediately back toward said print station,

sequentially retrieving said print control information from said memory in a second order to control printing on said second sides of said sheets in an orientation which is different with respect to said print station than the orientation in which said first sides of said sheets are printed,

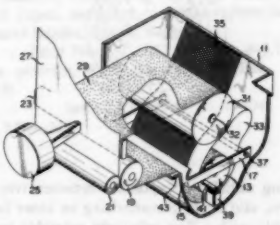
sequentially printing selected ones of said document images on the second sides of said inverted sheets to produce duplex printed sheets, and

transporting said duplex printed sheets to said output.

4,453,842
DOUBLE JOURNAL ROLL FEED

James L. Archer; Richard A. Hampson, both of Charlotte, N.C.; Susumu Matsuda, and Takashi Yagi, both of Shizuoka, Japan, assignors to International Business Machines Corporation, Armonk, N.Y. and Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,696
Claims priority, application Japan, Sep. 14, 1981, 56-145385
Int. Cl.³ B41J *11/50, 15/18*
U.S. Cl. 400—605 **5 Claims**



1. In a printer having a print head, a platen, a single supply roll having inner and outer layers of paper, a supply chamber which includes wall means for containing said single supply roll, and feed rolls for driving said inner and outer layers of paper from said supply roll past said platen and said print head, and causing formation of a blouse of said outer layer of paper, the improvement comprising:

a bail supported on said wall means of said supply chamber and being movable between a first operating position in which a feed passage for said inner and outer layers of paper is formed at a front portion of said supply chamber by said bail and said wall means,and a second position at which said bail is disposed at a rear portion of said supply chamber;

a switch coacting with said bail for sensing that said bail leaves said first operating position, for preventing at least printer operation when said bail leaves said first operating position;

said single supply roll having a core to which at least said inner layer of paper is secured, and wherein said core moves said bail from said first position when said inner layer of paper becomes exhausted; and

a flexible web having one end attached to said bail and another end attached to said wall means at a rear portion of said supply chamber, said flexible web being arranged

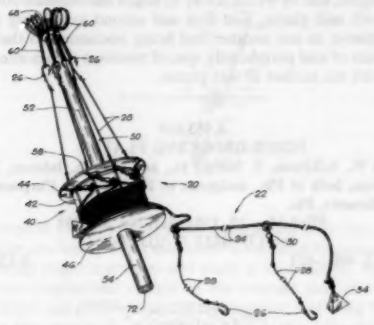
to contact a blouse of said outer layer of paper to thereby provide a restraint of said blouse of said outer layer of paper when said bail is in said first position.

4,453,843

TROT-LINE REEL

Andrew Martyniuk, 11 E. Jacquelin Dr., Bensenville, Ill. 60106

Filed Aug. 2, 1982, Ser. No. 404,396
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—57.3 **14 Claims**



14. A trot-line reel for reeling and unreeling a trot-line having a multiplicity of leaders secured thereto at spaced intervals therealong with fish hooks at the ends of said leaders,

said reel comprising a spool on which the trot-line may be coiled,

a shaft projecting axially from said spool,

said spool having an end flange formed with a plurality of slots for receiving the leaders of the trot-line,

and a multiplicity of elastic bands anchored to said shaft for receiving the hooks of the trot-line with said elastic bands stretched to maintain the leaders under tension to prevent tangling of the leaders and the hooks,

said elastic bands being anchored by anchoring means comprising a split ring on which said elastic bands are strung,

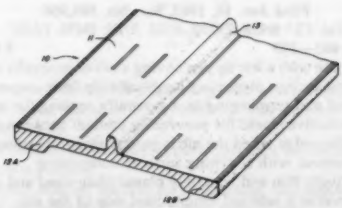
said split ring being of a closely coiled construction, which may be spread to add new elastic bands to said ring.

4,453,844

MONOLITHIC WATER-PERMEABLE CONCRETE ROADWAY AND RELATED LARGE AREA STRUCTURES WITH INTEGRAL DRAINAGE ELEMENTS

Arthur Shaw, 101 Stock Isle Apts., Key West, Fla. 33040

Division of Ser. No. 176,514, Aug. 8, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 475,205
Int. Cl.³ E01C *7/14*
U.S. Cl. 404—72 **5 Claims**



3. A method for forming water permeable concrete for a concrete roadway of the type comprising an elongated, monolithic structure having a thickness, width and generally flat upper surface for accommodating and supporting vehicular traffic, said method comprising the steps of:

forming an aqueous suspension of finely divided silicon dioxide of about 300 mesh or finer;

sizing an aggregate in said aqueous suspension, said aggregate being predominantly comprised of aggregate elements having a size in the range of ¼ to ½ of an inch, each cubic yard of said aggregate being sized with 15 to 22 pounds of silicon dioxide in 16 to 22 gallons of water;

adding between 384 and 480 pounds of cement to each cubic yard of said sized aggregate in said suspension;

casting the mixture of water, sized aggregate and cement; and

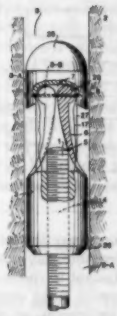
permitting the mixture of water, sized aggregate and cement to cure.

4,453,845

BASE THRUST ANCHOR SHELL ASSEMBLY

David C. Donan, Jr., Rte. 1, Rainwater La., Manitou, Ky.

Filed Jan. 19, 1983, Ser. No. 459,191
Int. Cl.³ E21D *20/00*; E02D *5/74*
U.S. Cl. 405—259 **10 Claims**



1. Base Thrust Anchor Shell Assembly, comprising in combination:

a bolt having a threaded shank for insertion in a bolt hole having a threaded upper end and a lower end adapted to permit rotation of said roof bolt;

a bolt base plate of sufficient dimensions to cover said bolt hole and having an aperture therethrough adaptable to receive said bolt and alignable with the vertical axis of said bolt hole;

an elongated shell adaptable for insertion into said bolt hole having a first lower end adaptable to receive said threaded bolt and a second upper end having apertures therethrough adaptable to receive fastening means, and having an interior cavity extending substantially the full length of said elongated shell having a first lower threaded portion adaptable to receive said threaded bolt and an upper second portion having a terminus in proximity to said second upper end adaptable to receive one or more expansion wings and alignable with said apertures of said second upper end of said elongated shell, and having central exit apertures positioned between said first lower end and said second upper end of said elongated shell on opposite sides of the central portion of said elongated shell adaptable to permit said expansion wings to exit therethrough;

one or more expansion wings having a first end adaptable to be received in said terminus of said interior cavity of said elongated shell and having fastening apertures alignable with said apertures of said second upper end of said elongated shell and adaptable to receive fastening means, and having an elongated shank tapering from said first end of said expansion wing to a second end adaptable to exit from said central exiting apertures in said elongated shell to

engage the strata of the walls of said bolt hole, and means adaptable to receive the upper end of said threaded bolt; and

fastening means to insert through said apertures of said second upper end of said elongated shell and said fastening apertures of said first end of said expansion wings and to engage and hold said expansion wings in position in said terminus of said elongated cavity of said elongated shell.

4,453,846

MINE EQUIPMENT

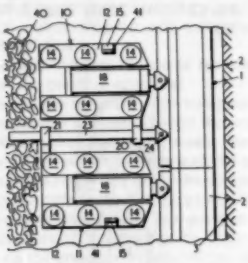
Rex Mullins, Burton-on-Trent, and David Brenkley, Chaddesden, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Dec. 9, 1981, Ser. No. 329,104

Claims priority, application United Kingdom, Jan. 20, 1981, 8101617

Int. Cl.³ E21D *23/12*

U.S. Cl. 405—299 **13 Claims**



1. Mine equipment for measuring advance of mobile equipment, comprising a releasable stay component adapted to be releasably anchored adjacent to the mobile equipment, in use the released stay component being capable of being advanced relative to the mobile equipment, an elongate component securable to the mobile equipment such that in use it extends rearwardly of the mobile equipment relative to the direction of advance and is movable only with the mobile equipment, and sensor means associated with the stay component and adapted to sense relative movement of the components, the elongate component being magnetised such that a magnetic field is induced adjacent thereto, the induced magnetic field intensity varying longitudinally of the elongate component.

4,453,847

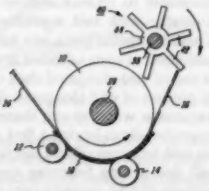
RECORD CARRIER FEED ARRANGEMENT FOR A PRINTER

Henry E. Smith, Pleasanton, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1982, Ser. No. 418,347

Int. Cl.³ B41J *13/20*

U.S. Cl. 400—645.5 **6 Claims**



1. A record carrier feed arrangement for a printer having a platen rotatable about a first axis for serially transporting record carrier sheets past a printing region and against which each record carrier sheet is to be urged in intimate contact, wherein the leading edge of the record carrier sheet, when transported by said platen, diverges therefrom in the vicinity of said printing region, said feed arrangement being characterized by including

guiding means rotatable about a second axis, said guiding means comprising a set of peripherally spaced resilient members, extending outwardly from said axis, between which the record carrier leading edge may be captured, by which it may be redirected toward said platen as it diverges from said platen, downstream of said printing region, and by which it may be urged into intimate contact with said platen, said first and second axes being fixed relative to one another and being positioned so that the ends of said peripherally spaced members blades interfere with the surface of said platen.

4,453,848

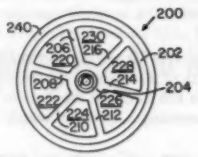
NOISE-REDUCING PLATEN

James W. Adkisson, S. Merrit Is., and Paul A. Ishman, Melbourne, both of Fla., assignors to Florida Data Corporation, Melbourne, Fla.

Filed May 24, 1982, Ser. No. 381,593

Int. Cl.³ B41J *11/053, 19/04*

U.S. Cl. 400—661 **9 Claims**



1. In a printer apparatus having a platen and a printing element for striking the platen,

the platen comprising:

a hollow circular cylinder;

a hub disposed at least substantially along the longitudinal axis of and within the cylinder; and

means for limiting the generation of normally audible noise when the printing element strikes the platen, the noise limiting means comprising:

wall means for dividing the annular region between the cylinder and the hub into a plurality of separated, longitudinal channels open at each end extending the length of the cylinder; and a rubber layer disposed against and about the outer surface of the cylinder.

4,453,849

PROTECTIVE SHIELD FOR A FELT TIP PEN

Manuel J. Fernandez, 7009 Maynard Ave., Canoga Park, Calif. 91307

Filed Jun. 18, 1982, Ser. No. 389,906

Int. Cl.³ B43K *23/00, 8/02, 3/02;* B43L *13/02*

U.S. Cl. 401—193 **5 Claims**

1. For use with a felt tip pen having a nib of generally rectangular cross section projecting longitudinally from one end of a pen barrel and terminating in a generally rectangular writing tip, a protective shield for preventing contact between the nib and a ruling edge when the nib is guided along the ruling edge in engagement with a writing surface, comprising:

a relatively thin and generally planar plate sized and shaped to overlie a selected longitudinal side of the nib;

a relatively thin and generally planar blade formed coplanar with said plate and projecting therefrom for relatively snug reception into the end of the pen barrel alongside the selected side of said nib for mounting said plate in overlying relation against the selected side of the nib with one

edge of said plate terminating slightly short of the nib writing tip, said plate having an outboard face for contacting the ruling edge to space the nib from the ruling edge when the nib is guided along the ruling edge in a direction generally parallel with said plate and with said plate disposed between the nib and the ruling edge; and

a relatively short wing generally coplanar with said plate and projecting outwardly from one side of said plate, said plate and said wing having a combined width greater than the width of said blade, and said wing defining a shoulder

formed thereon for abutting engagement with the end of the pen barrel when said blade is received thereinto, said wing projecting from said plate at least slightly beyond one longitudinal margin of the selected side of the nib when said plate is mounted thereagainst, said wing having a free marginal edge for contacting the ruling edge to space the nib therefrom when the nib is guided along the ruling edge in a direction generally perpendicular to said plate with said wing disposed between the nib and the ruling edge.

4,453,850

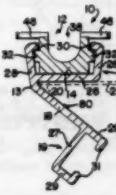
SUPPORT DEVICE FOR A BINDER SYSTEM

Dale M Purcocks, Johannesburg, South Africa, assignor to Duel International Stationary Co., Ltd., Panama

Filed Apr. 12, 1982, Ser. No. 367,703

Int. Cl.³ B42F *13/10, 15/00*

U.S. Cl. 402—4 **29 Claims**



1. A support device for a binder system which comprises an elongate body member and which defines in cross-section along its length

a first channel section for supporting at least one binder strap securing means;

a second channel section for supporting suspension means for the suspension of the binder system; and

a flange connecting the first channel section to the second channel section, wherein an edge portion of a cover sheet can be clamped between the first and second channel sections.

4,453,851

SECURING DEVICE, THE FORMATION THEREOF, AND A BINDER SYSTEM

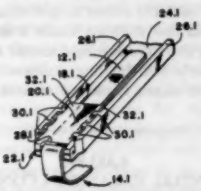
Dale M. Purcocks, P.O. Box 159, Mayfair, Johannesburg, South Africa

Filed Apr. 16, 1980, Ser. No. 140,929

Claims priority, application South Africa, Apr. 19, 1979, 79/1859

Int. Cl.³ B42F *13/14*

U.S. Cl. 402—15 **40 Claims**



1. A sheet material binder system which includes a binder strap and a securing device for securing the binder strap, the securing device comprising a base member having a securing zone for receiving a portion of the binder strap, a clamping member integral in one piece with and extending from the base member, a pivot zone being defined between the clamping member and the base member to permit pivotal displacement of the clamping member relative to the base member between an inoperative position and a clamping position for clamping the binder strap in the securing zone and locking means for locking the clamping member in its clamping position.

4,453,852

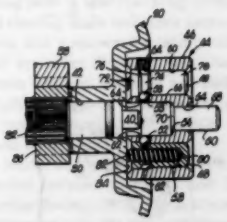
HUB DISENGAGING APPARATUS FOR COMBINES OR THE LIKE

James M. Gilcrest, 1605 S. Main St., Holden, Mo. 64040

Filed May 4, 1981, Ser. No. 259,986

Int. Cl.³ B60B *27/00*; F16D *1/06*

U.S. Cl. 403—1 **10 Claims**



1. A mechanism for selectively controlling the positioning of a shiftable structure under the influence of an outward yieldable bias in either an inwardly shifted position thereof or an outwardly shifted position thereof, including:

support means disposed in a fixed location relative to said positions of said structure;

first shiftable means carried by said support means and operably associated with said structure for movement of said first shiftable means between a normal outer position in which said structure is permitted to shift to said outwardly shifted position thereof under the influence of said bias and an actuated inner position in which said first shiftable means displaces said structure to said inwardly shifted position thereof against the force of said bias;

second shiftable means carried by said support means for

movement between a holding position thereof and a releasing position thereof;

means for yieldably biasing said second shiftable means toward said holding position thereof; and

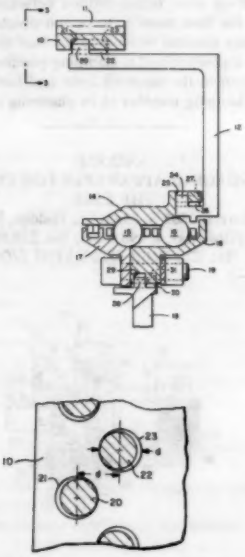
shiftable interlocking means for operably coupling said first and second shiftable means to maintain said first shiftable means in said actuated condition thereof when said second shiftable means is in said holding position thereof, to release said first shiftable means for movement into said normal position thereof when said second shiftable means is moved to said releasing position thereof, to maintain said second shiftable means in said releasing position thereof when said first shiftable means is in said normal position thereof, and to release said second shiftable means for movement into said holding position thereof when said first shiftable means is moved to said actuated position thereof.

4,453,853

DIFFERENTIAL EXPANSION CONTRACTION STRUCTURAL INTERCONNECTION SYSTEM

Earl S. Cain, Portola Valley, and Jerome A. Carlson, Woodside, both of Calif., assignors to Tribotech, Redwood City, Calif.

Filed Nov. 27, 1981, Ser. No. 325,573
Int. Cl.³ F16C 9/00; F16D 1/00; F16G 11/00
U.S. Cl. 403—28 **10 Claims**



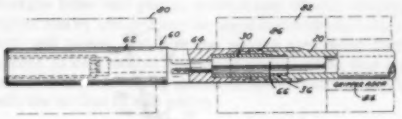
1. In a wheel-like structure having a plurality of members, a differential expansion/contraction structural interconnection system for two members comprising a first member having a circumferential surface with a plurality of recesses therein extending into said first member, a second member having a circumferential surface adjacent to and in cooperative relationship with said surface of said first member, and a plurality of radial projections extending from said surface of said second member and engaging said plurality of recesses thereby allowing relative concentric expansion or contraction movement between the surfaces of said first member and said second member while limiting radial, axial, circumferential, and rotational movement between the axes of said first member and said second member such that their axes remain coincident.

4,453,854

UNITIZED DRILL STEEL AND METHOD OF MANUFACTURING

Kenneth C. Emmerich, Lexington, Ky., assignor to Fansteel Inc., North Chicago, Ill.

Filed Feb. 22, 1983, Ser. No. 468,085
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ B21D 39/00; B23P 11/00
U.S. Cl. 29—520 **5 Claims**



1. A method of fabricating a drill steel for use in a string of telescoped drill steels for rock and roof drilling which comprises:

(a) selecting a straight tubular drill steel,

(b) selecting a male insert with a first portion to be projected into said drill steel and with a second portion to extend outwardly of the drill steel concentric with the drill steel, said first portion having an end with a reduced outer diameter in comparison with said second portion,

(c) heating said drill steel and driving said first portion of said male insert into the end of said heated drill steel thereby enlarging the end of said drill steel, and

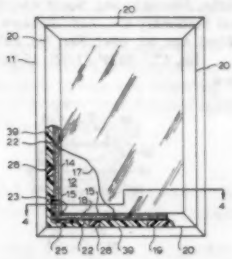
(d) confining the said drill steel externally thus causing the metal of said drill steel to form tightly around said reduced end of said insert.

4,453,855

CORNER CONSTRUCTION FOR SPACER USED IN MULTI-PANE WINDOWS

David J. Richter, Kankakee, and Clarence W. Miller, Bourbonnais, both of Ill., assignors to Thermetic Glass, Inc., Peoria, Ill.

Filed Aug. 3, 1981, Ser. No. 289,189
Int. Cl.³ E04C 2/38
U.S. Cl. 403—295 **1 Claim**



1. A corner construction for joining and maintaining adjacent tubular frame members in juxtaposition to form a corner in a frame, said corner construction comprising:

A. two tubular frame members arranged to form the desired frame profile at a corner of the frame, one end of one frame member being adjacent and juxtaposed to one end of the other frame member;

B. an aperture located in and through a wall of each frame member, each aperture being spaced a distance from the corner end of the frame member;

C. an abutment member having an outer portion comprising a first head and an intermediate portion comprising a shank and an inner portion comprising a second head, the

shank being positioned within the confines of the aperture, the first head being located outside of the outside surface of said wall of the tubular frame member, the second head being located inside of the inside surface of said wall of the tubular frame member;

D. the diameter of the first head being greater than the diameter of the aperture, so that a portion of the outside surface of the wall of the tubular frame member subtends an annulus of the first head, said first head annulus being continuous around the aperture and in surface-to-surface contact with the outside surface of said wall of the tubular frame around the aperture;

E. the diameter of the second head being greater than the diameter of the aperture so that a portion of the inside surface of the wall of the tubular frame member subtends an annulus of the second head, said second head annulus being continuous around the aperture and in surface-to-surface contact with the inside surface of said wall of the tubular frame around the aperture, whereby the abutment member extends across and substantially seals both the outside opening to the aperture and the inside opening to the aperture;

F. a detent bearing against the distal surface of the second head on each frame member, the distal surface being the surface located furthermost from the corresponding corner of the frame; and

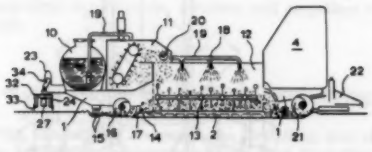
G. a rigid connecting member extending from the detent acting on one frame member to the detent acting on the other frame member, whereby each detent bearing on the second head of its corresponding abutment member holds one frame member in juxtaposition with respect to the other frame member.

4,453,856

SELF-PROPELLED OPERATING APPARATUS FOR THE REGENERATION PAVEMENT

Mario Chiostri, Sesto Fiorentino, and Pierluigi Ceseri, Florence, both of Italy, assignors to Autostrade-Concessioni e Costruzioni Autostrade S.p.A., Italy

Filed Jun. 5, 1981, Ser. No. 271,018
Int. Cl.³ E01C *23/06*
U.S. Cl. 404—91 **5 Claims**



1. A self-propelled operating apparatus for resurfacing roadway pavement, one lane at a time, which pavement is made of a bituminous mix, comprising:

a single frame;

drive means mounted on said frame for propelling said frame on a lane of a roadway to be resurfaced in an operating direction;

steering means connected to said frame and said drive means for steering said frame as it is propelled on a roadway in said operating direction;

an electric generating unit mounted on said frame;

wave-guide antenna means connected to said frame at a forward end thereof extending transversely to said operating direction and of a length to extend substantially across the lane of roadway to be resurfaced, said wave-guide antenna means comprising at least one wave-guide having an open space and a slotted bottom surface adapted to face the roadway with a plurality of slots extending in said operating direction and spaced on said wave-guide transversely to said operating direction, said wave-guide having a short circuit plug plate closing one end thereof and an opposite end;

the radial-frequency generator mounted on said wave-guide adjacent said opposite end thereof and connected to said electric generating unit for generating microwaves;

a tri-gate power circulator mounted on said wave-guide adjacent said opposite end thereof and connected to said radial-frequency generator and said wave-guide at said opposite end thereof for distributing microwave energy to the interior of said wave-guide;

a resistive load mounted on said wave-guide adjacent said opposite end thereof and connected to said tri-gate power circulator for absorbing at least some micro-wave energy reflected inside said wave-guide back to said circulator;

a coolant storage tank mounted on said frame connected to said radial-frequency generator for supplying coolant thereto and cooling said radial-frequency generator;

ripping means connected to said frame and extending downwardly for engaging a roadway to be resurfaced, said ripping means positioned behind said wave-guide antenna means in said operating direction and sufficiently close to said wave-guide antenna means for ripping up roadway to be resurfaced while the roadway to be resurfaced is still hot after having been heated by micro-wave energy leaving said wave-guide antenna means;

first conveyor means connected to said frame and extending downwardly thereof toward a roadway surface and behind said ripping means in said operating direction for collecting roadway surface ripped by said ripping means and moving it toward a central axis of said frame in said operating direction;

movable shaving blade and chute means movably mounted to said frame and extending below said frame behind said first conveyor means in said operating direction for directing material conveyed by said first conveyor means away from a roadway from which the material came, said shaving blade and chute means being movable away from a roadway to permit material conveyed by said first conveyor means to remain on the roadway;

mixing means mounted to said frame adjacent the central axis thereof including a mixing chamber having a forwardly facing inlet in said operating direction positioned behind said shaving blade and chute means in said operating direction, and a rearwardly facing outlet behind said inlet in said operating direction, said chamber having a closed bottom between said inlet and outlet, said mixing means including a pair of counter-rotating blade mixers for mixing material supplied into said inlet from said shaving blade and chute means;

a bituminous binder tank mounted on said frame;

tubing connected between said tank and the top of said mixing chamber having a plurality of injection nozzles for directing bituminous binder into said chamber;

a filler tank mounted on said frame having a peforated bottom portion positioned over a forward portion of said mixing chamber in said operating direction;

dosing means movably mounted to said frame in said filler tank for dosing filler material to said mixing chamber;

second conveyor means mounted to said frame and positioned behind said mixing chamber outlet in said operating direction for distributing material from said mixing chamber outwardly from said central axis across a lane of a roadway to be resurfaced; and

finishing plate means mounted to said frame and extending below said frame behind said second conveyor means in said operating direction for compacting material onto a roadway to be surfaced, which material is provided from one of said mixing chamber outlet and an area of roadway to be surfaced below said mixing chamber.

4,453,857

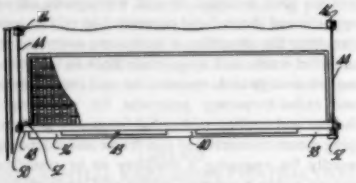
METHOD FOR STORING HAZARDOUS OR TOXIC WASTE MATERIAL

Gilbert M. Serra, 951 S. Hadley Rd., Ortonville, Mich. 48462; Larry Fortier, 7345 Shaker Dr. N., Pontiac, Mich. 48054, and Ernest N. Valentino, 9365 Gibbs Rd., Clarkston, Mich. 48016

Continuation-in-part of Ser. No. 68,529, Aug. 22, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 301,455

Int. Cl.³ G21F *9/22*

U.S. Cl. 405—128 **7 Claims**



1. The method of storing hazardous waste material comprising the steps of: sealing the material in rigid cylindrical containers of uniform size; forming an open topped chamber of concrete at a substantial depth in the earth having a floor with a continuous peripheral channel formed therein, and continuous side and end walls; said floor having a shelf projecting beyond said side walls and said end walls, said shelf having a recovery trench formed therein said recovery trench being adapted to receive leachate from the concrete chamber, said trench having a well adapted to receive the leachate; a pump means adapted to remove leachate to the surface for further treatment; said continuous side and end walls are formed with a bead which interlocks with said channel, said side and end walls projecting from the floor by a distance exceeding the height of a container; standing a group of filled, sealed containers on end upon said floor in a spaced non-touching relationship; placing a fixed grid in an overlying relationship to said containers said grid being attached to said side walls to maintain said containers in position; subsequently pouring concrete into said chamber to a depth exceeding the height of said containers by at least three inches to thereby completely encase said containers; and pouring a final layer of concrete atop the chamber, said final layer extending outward to form a top on a said chamber, said top having a mechanical locking arrangement with the upper surface of said side walls.

4,453,858

SAFETY DEVICE FOR MARINE PLATFORM

Alain Y. Guiader, Nantes, France, assignor to Brissonneau & Lotz Marine, Carquefou-Nantes, France

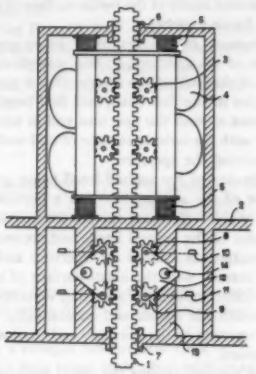
Filed Jul. 6, 1981, Ser. No. 280,796

Claims priority, application France, Jul. 30, 1980, 80 16816; Jun. 1, 1981, 81 10809

Int. Cl.³ E02B *17/08*; B66F *1/00*

U.S. Cl. 405—198 **8 Claims**

1. Safety device for a marine platform designed for ocean drilling operations, said platform being equipped with a number of retractable pads provided with racks, which in the retracted position allow the platform to be moved by flotation and which in the support position on the sea bottom allow the platform to be raised above the surface of the sea by means of elevator devices attached to the platform, each elevator device including motor means and at least one pair of pinions driven thereby and engaging one of said racks, said safety device being characterized by the fact that it includes, for each one of the said racks, at least one further pair of pinions engaging said one rack and mounted on a support chassis that is separate from and independent of said elevator devices and is attached to the said platform separately from said elevator devices, said safety device also including a normally engaged brake fitted to the shaft of each of the last-mentioned pinions and preventing rotation of the same, each further pair of pinions and the associated brakes operating independently of the motor means and the first-mentioned pinions.



4,453,859

DEVICE FOR CONNECTING AND DISCONNECTING THE SWIVEL OF AN OSCILLATING MARINE PLATFORM AND A METHOD FOR PUTTING THE SAID DEVICE INTO USE

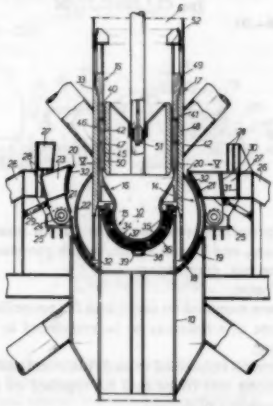
Francois G. Sédillot, Velizy; William L. Hudson, and Bernard Castellan, both of Paris, all of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines "C. G. Doris", Paris, France

Filed Jun. 22, 1982, Ser. No. 390,911

Claims priority, application France, Jun. 23, 1981, 81 12282

Int. Cl.³ E02B *17/00*

U.S. Cl. 405—202 **14 Claims**



1. A marine platform structure, comprising:

an oscillating marine platform, said platform including a shaft having a tube projecting from the lower end thereof;

a base fixed on the sea bed;

a swivel means for connecting the lower end of the shaft to said base, said swivel means comprising:

a first spherical swivel member arranged at the lower end of the shaft and adapted to engage a first swivel receiving means arranged in the base;

a cartridge removably secured within the tube adjacent the lower end thereof; and

a second spherical swivel member fixed to the end of said cartridge and adapted to engage a second swivel receiving means arranged in the base;

whereby said second swivel member together with said cartridge is adapted to be disengaged and removed from the second swivel receiving means while said first swivel member remains engaged with the first swivel receiving means.

4,453,860

FIREDAMP-SAFE METHOD FOR STUD DRIVING CARTRIDGES

Heinrich Brachert, Troisdorf, and Axel Homburg, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 145,655, May 2, 1980, abandoned, which is a continuation of Ser. No. 855,134, Mar. 2, 1978, abandoned. This application May 10, 1982, Ser. No. 376,797

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709037

Int. Cl.³ E21D *20/00*

U.S. Cl. 405—259 **17 Claims**

1. In a process for driving a stud in a coal mine having a firedamp atmosphere which comprises disposing a stud driving machine in said firedamp atmosphere while in said coal mine, said stud driving machine comprising a cartridge chamber containing a propellant cartridge, said cartridge chamber in facing relationship to a piston or plunger itself in driving relationship at one one end with a stud to be driven in said coal mine, and firing said propellant, the improvement wherein said propellant cartridge consists essentially of a stud driving propellant, said propellant cartridge being coated with a coating material selected from the group consisting of a polymer, an amide of a C_{2-4} dicarboxylic acid and ammonium oxalate, said polymer in turn being selected from the group consisting of a polyacetal, a polyformal, a polyacrylate and a polymethacrylate, which coating material upon ignition of said propellant, disintegrates, said coating being present on said propellant cartridge in an amount of 15 to 30 percent by weight based on the weight of said propellant cartridge, said stud driving propellant comprising nitrocellulose, whereby said propellant is firedamp-safe.

4,453,861

TRENCH WALLS AND METHOD FOR CONSTRUCTING SAME

Helmut Bretz, Munich, and Hubert Eberle, Gräfelfing, both of Fed. Rep. of Germany, assignors to Firma Josef Riepl Bau-AG, Munich, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,872

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944385

Int. Cl.³ E02D *5/20*

U.S. Cl. 405—267 **5 Claims**

1. A method for constructing a trench wall having a finished exposed surface comprising the steps of:

excavating a trench in the soil;

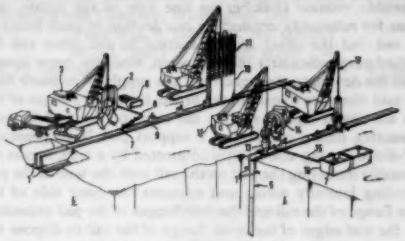
simultaneously filling said trench with a shore-up fluid;

inserting a pair of spaced apart vertical partition elements having guide means thereon in said trench;

engaging the ends of a prefabricated plate with said guide means and guiding said plate downward between said vertical partition elements at the side of the trench wall which is later to be exposed by removing the soil;

introducing in-situ concrete into the space between said plate and the other side of said trench and between said vertical partition elements and thereby displacing said shore-up fluid;

allowing said in-situ concrete to harden and adhere to said plate and to said vertical partition elements;



and removing the soil to expose the plate and the associated vertical partition elements.

4,453,862

METHOD FOR ENSURING MECHANICAL CONTINUITY BETWEEN TWO ADJACENT PANELS OF A REINFORCED CONCRETE WALL CAST IN THE GROUND

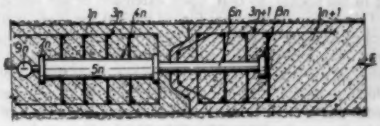
Roland A. C. Stenne, Ville D'Avray, France, assignor to Sondages Injections Forages "S.I.F." Enterprise Bachy, Paris, France

Filed May 14, 1982, Ser. No. 378,328

Claims priority, application France, May 22, 1981, 81 10223

Int. Cl.³ E02D *5/18*; E04B *1/16*; E04G *21/00*

U.S. Cl. 405—267 **7 Claims**



1. Method for providing mechanical continuity and transmission of stresses between two adjacent panels of a reinforced concrete wall cast into excavations in the ground, which comprises embedding the bodies of a plurality of jacks into the concrete of a panel n which is being formed, the jacks being arranged at intervals over the height of the panel and being arranged at the end of said panel adjacent to the next panel n+1 to be formed, the stems of the jacks being in the retracted position and their ends being arranged in the immediate vicinity of formwork means provided at the end of the excavation in which the panel n is cast, then, after the concrete of this panel has set to a sufficient extent, carrying out excavation for the next panel n+1 and removing formwork means provided at the end of the excavation for the panel n, then causing the stems of the jacks to be extended so that they penetrate into the excavation for the next panel n+1 to be formed and, finally, concreting the excavation for said panel n+1, thus embedding the stems of the jacks in the concrete.

4,453,863

TRENCH SHORING DEVICE

Russell L. Sutton, Humble, Tex., and George Bradberry, Hebert, La., assignors to Safety Lights Sales & Leasing, Inc., Houston, Tex.

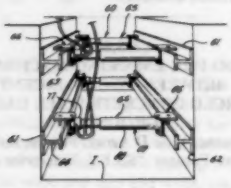
Filed Jan. 29, 1982, Ser. No. 343,541

Int. Cl.³ E02D *17/08*; E04G *25/00*

U.S. Cl. 405—282 **2 Claims**

1. A trench shoring device, comprising a pair of elongate rails of "I"-beam shape each including a relatively wide outer flange and a relatively narrow inner flange connected by a

web, at least one cross brace including axially extendible and retractible sections one of which has a cylinder and the other of which has a piston sealably slidable in the cylinder to form a variable volume chamber on one side of the piston, and means for releasably connecting one section of each brace to one rail and the other section thereof to the other rail for disposal perpendicularly therebetween, whereby, upon lowering of the device to the trench and the supply of pressure fluid into said chamber to extend the brace, the outer flanges of the rails are urged tightly against the sides of the trench, each connecting means comprising a support pad **28** of generally "H"-shape having side flanges connected by a web, means for releasably mounting the pad on the rail with the web of the pad extending laterally across and adjacent the inner side of the inner flange of the rail and the side flanges of the pad extending past the end edges of the inner flange of the rail to dispose the outer edges of the side flanges of the pad adjacent the inner side of the outer flange of the rail, a socket on the inner side of



the web of the pad to receive the outer free end of the brace section, means for releasably connecting the outer free end of the brace section to the support pad, when said end is so received in the socket, so that, upon extension of the brace, the ends of the brace sections are forced against the inner walls of the sockets and the webs of the support pads are forced against the inner flanges of the rails, whereby compressive force due to extension of the brace is transferred to the outer flanges of the rails through both the webs of the rails and the side flanges of the pads, and a load transfer block on the outer end of the socket to dispose the inner side of the block adjacent the end of the brace section, the outer side of the block having a flat portion which is essentially flush with the outer side of the web of the pad, when the brace is perpendicular to the rails, and a curved portion which permits the block to rotate with respect to the pad as the brace is swung into and out of a folded position with respect to the rails when pressure fluid is exhausted from the chamber.

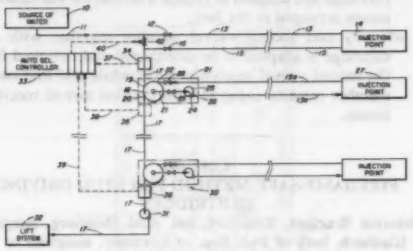
4,453,864

INJECTION OF SOLIDS INTO A HIGH PRESSURE SLURRY STREAM

Jeffrey L. Beck, and Ahmed A. El-Saie, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Nov. 8, 1982, Ser. No. 439,670
Int. Cl.³ B65G *53/30*
U.S. Cl. 406—19 **7 Claims**

1. A multipoint injection system for first and succeeding mine faces, said system having a source of water connected to said first mine face with a slurry from said first mine face coupled to a main slurry line, controllable bypass valve means coupled between said source of water and said main slurry line, vortex junction apparatus at a location servicing each succeeding mine face, said vortex junction apparatus having a high pressure inlet and a high pressure outlet, a low pressure outlet and a slurry inlet, means coupling each vortex junction apparatus in series with said high pressure inlet and said high pressure outlet coupled in series with said main slurry line, and means coupling said last vortex high pressure outlet to a transfer system, means for coupling each of said low pressure outlets to said corresponding mine face for supplying fluids to said face and means for coupling slurry from said mine face to said corresponding vortex junction apparatus slurry input, flow measuring means coupled to said main slurry line from said first mine face and generating an output, means accepting said



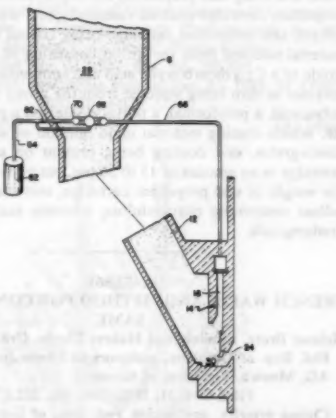
output and generating a control signal to said bypass control valve for maintaining said flow in said main slurry line at a predetermined value.

4,453,865

AUTOMATIC PRESSURE SENSITIVE REGULATION ASSEMBLY

Richard C. Norton, Boston, Mass., assignor to Stone & Webster Engineering Corp., Boston, Mass.

Filed Jul. 21, 1982, Ser. No. 400,397
Int. Cl.³ B65G *53/66*
U.S. Cl. 406—24 **9 Claims**



1. An automatic pressure sensitive regulation assembly for regulating the flow of particulate solids between upstream and downstream reservoirs of particulate solids by metering the flow of fluid provided to urge the particulate solids to flow from the upstream reservoir to the downstream reservoir comprising:

means for the passage of particulate solids between said upstream and downstream reservoir;

at least one source of pressurized fluid;

a first pressurized fluid distributor located in the particulate solids upstream of the downstream solids reservoir in said means for the passage of the particulate solids between said upstream and downstream reservoir;

means for delivering pressurized fluid from said source of pressurized fluid through said first pressurized fluid distributor at a rate to cause incipient fluidization of the

particulate solids adjacent said first pressurized fluid distributor and an attendant hydrostatic pressure;

a second pressurized fluid distributor;

means for delivering pressurized fluid from said source of pressurized fluid through the second pressurized fluid distributor to urge the particulate solids to the downstream reservoir;

and means to sense variations in said hydrostatic pressure as a function of the height of the particulate solids above the first pressurized fluid distributor and to meter the flow through the second pressurized fluid distributor of fluid provided to urge the particulate solids to the downstream reservoir as a function of said hydrostatic pressure;

whereby as the height of the particulate solids above the first pressurized fluid distributor increases, the flow of fluid to urge the solids to the downstream reservoir will become greater.

4,453,866

FEEDING GRANULAR MATERIAL INTO A GAS STREAM

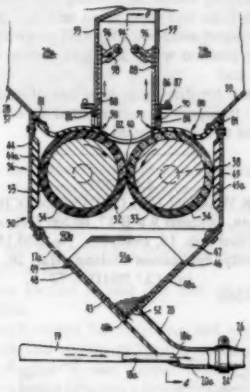
Austin T. Ryan, Warracknabeal, Australia, assignor to Doreen Rose Ryan, Warracknabeal, Australia

Filed Mar. 2, 1981, Ser. No. 239,707

Claims priority, application Australia, Mar. 3, 1980, PE2625; Jul. 30, 1980, PE4778

Int. Cl.³ B65G *53/40, 53/52*

U.S. Cl. 406—70 **22 Claims**



1. Apparatus for feeding granular material in a gas stream comprising:

a receptacle for granular material;

a plurality of ducts for constraining respective gas streams;

a pair of resiliently compressible movable surfaces which contact or almost contact to define a nip between them, the surfaces being so disposed that granular material may fall from the nip into said ducts through respective ports in the ducts and being movable into the nip from above;

metering means defining an array of controllable discrete openings from said receptacle and being positioned above said nip and lying adjacent one of said surfaces and displaced along said surface from the nip for feeding granular material into said nip at a controlled rate, and (means for controlling said openings by) a shutter mounted for sliding movement with a respect to said openings for simultaneously varying their effective size, and control means to effect said movement of the shutter; and means adjacent the metering means formed with a plurality of slots;

wherein said openings, slots and ports are in vertical register so as to define flow paths for respective streams of granular material.

4,453,867

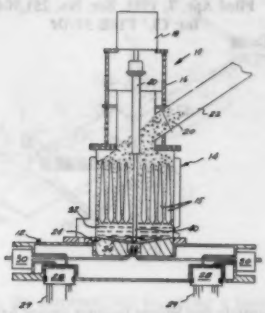
DISC STIRRER

David L. Sharps, Martinsville, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1982, Ser. No. 406,555

Int. Cl.³ B01F *7/16, 7/26;* B29B *1/06*

U.S. Cl. 366—98 **3 Claims**



1. In an apparatus for melting particulate polymeric material including a melting grid, a collecting chamber for the molten polymer placed beneath the grid and a stirrer consisting of a driven central shaft coaxial with the collecting chamber and of a plurality of blades extending from the shaft and shaped to sweep the contour of the chamber, the improvement comprising: a circular plate having upper and lower surfaces and a peripheral edge mounted above the blades on said shaft perpendicular thereto, said plate having a diameter less than the diameter of the collecting chamber; a pair of vanes attached to the lower surface of the plate in opposite quadrants of the plate near its peripheral edge; and a pair of opposed curved ribs attached to the upper surface of said plate, each rib having an end extending below the peripheral edge of said plate.

4,453,868

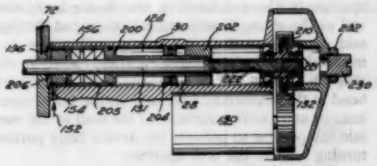
AIR-OPERATED, HYDRAULICALLY-CONTROLLED DRILLMOTOR

James C. Winslow, Carlsbad, Calif., assignor to Winslow/McDowell, Inc., Carlsbad, Calif.

Filed Aug. 3, 1981, Ser. No. 289,826

Int. Cl.³ B23B *47/24*

U.S. Cl. 408—138 **3 Claims**

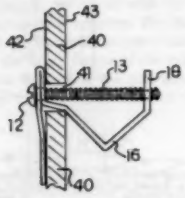


1. The improvement in means to drill a workpiece including a drill, including a spindle supporting and rotating said drill, including means to rotate said spindle, and including means to achieve feeding of said drill relative to said workpiece, comprising:

said means operative to rotate said spindle including a rotary driving member having an opening receiving said spindle and said spindle being connected to said driving member by means consisting of external helical splines on said spindle engaging with internal helical splines on said driving member, said splines having helixes spiraling in the same direction as the spindle direction of rotation to withdraw said spindle and said drill therewith producing a

counterforce to the force feeding said spindle relative to said workpiece as said drill encounters resistance to rotation in said workpiece.

4,453,869
FASTENER TECHNOLOGY
George V. Cremieux, 2701 E. Utopia Rd., Phoenix, Ariz. 85024
Filed Apr. 7, 1981, Ser. No. 251,904
Int. Cl.³ F16B 35/04
U.S. Cl. 411—38 10 Claims



1. An expansible one legged fastener device having a separable screw and a unitary body structure for non deforming insertion into an apertured, interior and exterior surfaced wall structure to secure an object in proximity to the aperture, said body structure comprising:

(a) a generally elongated initially flat tab portion for grasping by a user to insert said one legged device body, said tab portion further having an end portion and an apertured portion,

(b) an apertured member extending generally 180 degrees congruously with said apertured portion of said tab portion, and having its aperture aligned with said aperture of said apertured portion,

(c) an upper leg member congruously and obtusely appending from said apertured member, said upper leg member having a knee for bending at its end,

(d) a lower leg member congruously and obtusely extending from said knee in the direction of said apertured member, said knee being in a preformed outwardly disposed configuration essentially having its most outward portion extending beyond the wall aperture in which the device is to be inserted, and,

(e) a foot member having screw receiving means extending from said lower leg member, said screw receiving means spacially alligned with said apertures of said apertured portion and said apertured member, whereby, said one legged device body can be easily inserted through the wall aperture without deforming the device body structure, and as the screw is subsequently extended through both said apertures and threaded into said screw receiving means the head of the screw eventually abuts an object or said tab portion and causing said body portion to easily bend at the preformed knee and secure the device to the interior and exterior surfaces of the wall as the user holds said tab portion to prevent the device body portion from turning relative the wall aperture.

4,453,870
ACCUMULATOR
Harley F. Bean, Grapevine, Tex., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 8, 1982, Ser. No. 355,827
Int. Cl.³ B65H 31/30
U.S. Cl. 414—43 26 Claims

1. An accumulator for sheets of paper or the like comprising:

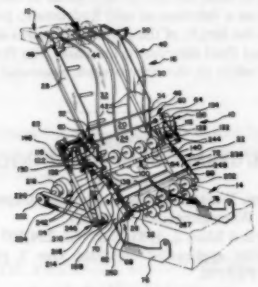
intake means including a floor which extends angularly downward and having an intake and an outlet at upper and lower ends thereof, respectively;

gate means at said outlet actionable to a closed position for stopping sheets which are propelled into said inlet, thereby accumulating sheets into a set, and to an open position to allow an accumulated set therepast;

a pair of pinch rollers proximate said outlet and said gate means for grasping an accumulated set of sheets;

a pair of rearward rollers for grasping a set of sheets conveyed from said pinch rollers therebetween;

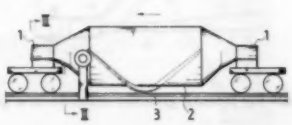
means for linking said pinch rollers to said rearward rollers such that a distance between said rearward rollers corresponds to a distance between said pair of pinch rollers when an accumulated set is grasped by said pinch rollers;



roller positioning means for holding said pinch rollers open and away from said floor when said gate means is in said closed position and for urging said pinch rollers into a set engaging position when said gate means is in said open position; and

motive means for driving at least one of said pair of pinch rollers to transport an accumulated set of sheets through said outlet to said rearward rollers.

4,453,871
GOODS WAGON UNLOADING MECHANISM
Aarne Lönnroth, Isokaari 9 b B 17, 00200 Helsinki 20, Finland
Filed Feb. 19, 1982, Ser. No. 350,156
Claims priority, application Finland, Mar. 20, 1981, 810865
Int. Cl.³ B61D 7/12
U.S. Cl. 414—384 3 Claims



1. An unloading mechanism for a goods waggon having a goods container cylindrically shaped at its bottom and having a longitudinally extending cylinder axis and rotatably carried at its ends in bearings on bogies for rotation about said longitudinal axis, said unloading mechanism comprising an arcuate guide affixed to the goods container and extending on the underside around the cylindrical bottom thereof in a helical configuration from one end to the other so that its initial and ultimate ends are located in a horizontal plane passing through said longitudinal axis of the cylindrical container, and first and second rollers engageable with said guide, the first roller being rotatably carried on supporting means disposed on one side of a travelling path of said waggon at the initial end of an unloading station, whereby as the waggon is moved to the unloading station, said first roller comes into contact with the underside of the guide forcing, as the waggon continues to move forward, the goods container to turn in its bogie bearings through 180° about its said longitudinal axis into an inverted position, and said second roller being rotatably carried on further sup-

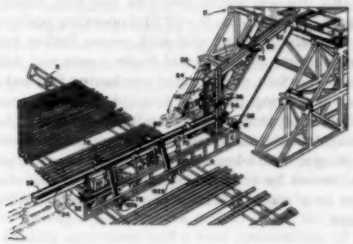
porting means which is at a higher level than the supporting means carrying the first roller and is disposed on the opposite side of said travelling path of said waggon, whereby said second roller can come into contact with the upper side of the guide forcing the goods container to turn another 180° about its said longitudinal axis to return it to a transport position.

4,453,872

HANDLING APPARATUS FOR PIPE AND OTHER TUBULARS

Robert Frias, Odessa; Troy D. Cain, Fort Worth, both of Tex.; John J. Gallagher, Jr., Jeanerette, and William Watson, Lafayette, both of La., assignors to Ingram Corporation, New Orleans, La.

Filed Dec. 7, 1981, Ser. No. 328,252
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 **50 Claims**



1. An apparatus for transferring pipe or other tubulars to and from the floor of a drilling rig comprising:

stationary trough means for receiving and supporting pipe adapted to be located below the level of said drilling rig floor with one end extending toward said rig and located in proximity to said rig,

support means located at said one end of said stationary trough means,

movable trough means for receiving and supporting pipe aligned with said stationary trough means and having a first end coupled to said support means for generally vertical movement between a lower position and an upper position and having an opposite end adjacent said rig,

said lower position being adjacent to said one end of said stationary trough means to permit the transfer of pipe between said movable and said stationary trough means, said upper position being generally above and substantially spaced from said one end of said stationary trough means,

clamping means for holding pipe to said movable trough means as it moves between said lower and said upper positions,

moving means for moving pipe lengthwise along said stationary trough means to said one end and onto said movable trough means when said first end of said movable trough means is in said lower position and for allowing pipe to move down said movable trough means when said movable trough means is in said lower position,

power means for moving said first end of said movable trough means between said lower and upper positions,

lifting means secured to said apparatus for raising said apparatus, and

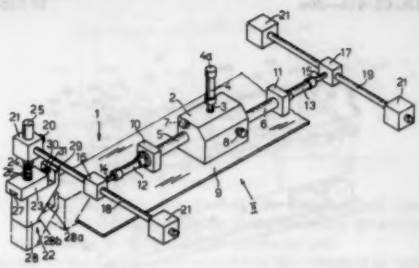
pivoting means cooperating with said lifting means to permit the pivoting of said apparatus.

4,453,873

AUTOMATIC SUPPORTING PLATE LOADER

Ezio Curti, Viale Regina Giovanna, 38, 20100 - Milan, Italy

Continuation-in-part of Ser. No. 357,215, Mar. 11, 1982, abandoned. This application Mar. 18, 1983, Ser. No. 476,547
Int. Cl.³ B65G *59/02*
U.S. Cl. 414—120 **13 Claims**



1. A loader for automatically supplying a base plate for a printed circuit to a laminating machine, comprising

a brace locatable over a stack of plates;

vertical means for moving said brace vertically toward and away from the stack;

two adjustable guiding rods extending in parallel and horizontally from said brace, said guiding rods having cylinder-piston units at ends thereof remote from said brace;

parallel and horizontal cross rods coupled to said cylinder-piston units at ends thereof remote from said guiding rods;

adjustable and movable gripping elements coupled to said cross rods; and

a driven roller runway parallel to each of said cross rods, and movable between a rest position permitting a plate to pass freely between said runways and an operational position engaging the plate previously engaged by said gripping element.

4,453,874

ARTICLE-HANDLING APPARATUS

Harmen Veldhuizen, Vlaardingen; Hendrik Streefkerk, Bergschenhoek, and Gerhard Van Der Tas, Hoek van Holland, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" BV, Rotterdam, Netherlands

Filed Dec. 22, 1982, Ser. No. 452,407
Int. Cl.³ B65G *59/02*
U.S. Cl. 414—123 **5 Claims**

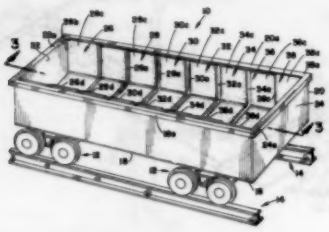
1. An apparatus for handling articles comprising a frame, a mainly horizontal supporting surface, a plurality of parallel supporting fingers which are longitudinally slidably supported in said frame under the supporting surface and yieldably biased in their extended position, each being provided with a driven pick-up roller at their extending extremity, while the supporting surface is formed by a plurality of parallel conveyor belts extending parallel to and between the fingers.

4,453,875

DISPLACEABLE LINER FOR UNLOADING WHEEL SUPPORTED RECEPTACLES

Theodore C. Johnson, Sr., 14917 Hillbrook Cir., Novelty, Ohio 44072

Filed Jul. 12, 1982, Ser. No. 397,526
Int. Cl.³ B65G 67/24
U.S. Cl. 414—304 10 Claims



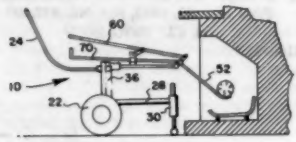
1. A displaceable liner arrangement for unloading an open top receptacle having a bottom wall, a pair of spaced apart first walls extending upwardly from said bottom wall, and a pair of spaced apart second walls extending between said first walls and upwardly from said bottom wall, said walls having upper ends providing said open top, said liner arrangement comprising a plurality of adjacent belt members between said first walls and overlying said second walls and bottom wall, said belt members having opposite sides extending in the direction between said second walls and opposite ends adjacent the upper ends of said second walls, each of said belt members having a width less than the distance between said first walls, the sides of adjacent ones of said belt members being overlapped in the direction between said first walls, and one of the opposite ends of each of said belt members including means for connecting said one end to the upper end of the corresponding one of said second walls, whereby upward displacement of the other of said opposite ends of each of said belt members displaces said belt members upwardly relative to the upper end of said corresponding one of said second walls.

4,453,876

FIREPLACE LOG AND COAL FEEDER

Julien J. Arpin, R.F.D. #2, Box 229, Lisbon, Conn. 06351

Filed May 14, 1981, Ser. No. 263,687
Int. Cl.³ B62B 1/02, 1/16
U.S. Cl. 414—183 7 Claims



1. Apparatus for use in the delivery of solid fuel into a fireplace comprising:

support means including frame means defining a first plane, means attached to said frame means for facilitating the movement thereof including at least a pair of surface contacting rolling members, handle means coupled to said frame means for providing control over the movement of said frame means, and support arm means defining a second plane which intersects said first plane, said support arm means having first and second ends coupled to said frame means for movement therewith, said support arm means second end being pivotally attached to said feeder means, the axis about which said feeder means is rotatable being perpendicular to said second plane;

feeder means including a fuel support and being pivotally attached to said support means, said feeder means being rotatable about an axis and having at least first and second operating positions, said first position of said feeder means providing stable support for the fuel, said second position of said feeder means discharging the fuel from said feeder means into a fireplace under the influence of gravity;

elongated control lever means having first and second ends, said first end being continuously coupled to said feeder means whereby raising of said second end of said control lever means moves said feeder means between said first and said second operating positions and lowering of said control lever means moves said feeder means between said second and said first operating positions;

leg means having first and second ends, said leg means first end being secured to said support arm means, said leg means extending from said support arm means to support said apparatus on the surface engaged by said rolling members via contact between said leg means second end and the surface; and

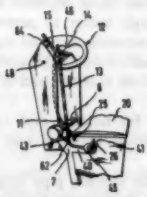
lock means pivotally attached to said support arm means and having first and second positions, said lock means retaining said feeder means in said first operating position when in said first position, said lock means further including flange means affixed to said feeder means and defining a locking surface, an elongated arm having first and second ends and being pivotally coupled to said support arm means, a projection extending from said first end of said elongated arm, said projection being engageable with said locking surface when said lock means is in its first position, and means for constraining the motion of said elongated arm to a plane generally perpendicular to said second plane.

4,453,877

DUMPING DEVICE FOR REFUSE CONTAINERS HAVING A DEVICE FOR OPENING THE COVER

Rolf Otto, Düringer Strasse 7, D5963 Wenden 3, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,663
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041105
Int. Cl.³ B66F 3/04
U.S. Cl. 414—411 10 Claims



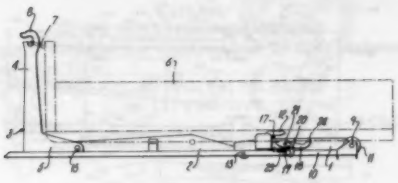
1. A dumping device for refuse containers at a refuse collecting station, particularly a refuse container having a hinged cover and at least one stop projection attached to the side of the cover, comprising a curved guideway adapted to receive said stop projection; a pivotable lifting arm adapted to raise said refuse container; and a hinged arm coupled between said pivotable lifting arm and said curved guideway, thereby causing said guideway to open said cover while said refuse container is raised.

4,453,878

LOCK DEVICE FOR LOADING EQUIPMENT

Teuvo Paukku, Raisio, Finland, assignor to OY Partek AB, Raisio, Finland

Filed Jan. 27, 1982, Ser. No. 343,267
Claims priority, application Finland, Feb. 12, 1981, 810430
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—491 **4 Claims**



1. A loading equipment consisting of a hook-device type arm construction, comprising a rear frame mounted pivotably at a rear end of a frame of a truck, a middle frame of the loading equipment being pivotably mounted to the rear frame at one of its ends by articulated joints, one end of the middle frame having an angle piece pivotably mounted around a rear end of a horizontal part of the angle piece, a vertical part of the angle piece being at its upper end provided with a grasping means for engaging a corresponding grasping component at a front wall of an exchange platform, at least one main piston-cylinder for operating the loading equipment being arranged such that one end of the piston-cylinder is fastened to the frame of the truck and the other end to the middle frame of the loading equipment, a second piston-cylinder for pivoting the angle piece independently in relation to the middle frame being arranged between the angle piece and the middle frame, the rear frame of the loading equipment and a base construction of the exchange platform being provided with jointly operative locking means for locking the exchange platform onto the loading equipment as the exchange platform is pulled into its front position, the rear frame of the loading equipment being provided with safety catches placed at each side of the rear frame and being arranged so that, when the exchange platform is being dumped, the safety catches pivot into the locking position in which the safety catches prevent shifting of the exchange platform backwards in relation to the loading equipment, the safety catches being opened when the rear frame is turned to the horizontal position, the locking means being arranged between the truck frame and the rear frame of the loading equipment, the locking means including transverse locking pins fitted to the truck frame and locking levers fitted to the rear frame of the loading equipment and jointly operative with the locking pins, the levers being forced by the exchange platform in the transport position to the open position such that the rear frame is secured to the truck frame when the exchange platform rises off the rear frame while the exchange platform is being loaded onto the truck frame or removed from same.

4,453,879

ANTI-JAM BLADE ASSEMBLY FOR REFUSE COMPACTOR

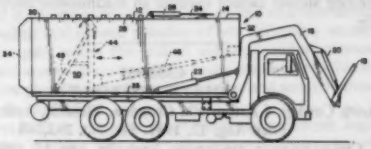
David E. Kelley, and Willis K. Quick, both of 2700 NW. 48 St., Pompano Beach, Fla. 33067

Filed Jan. 5, 1982, Ser. No. 337,204
Int. Cl.³ B65F *3/20*
U.S. Cl. 414—509 **4 Claims**

1. An anti-jam blade in combination with a refuse vehicle, the vehicle comprising:

a closed refuse receptacle having an opening in the top thereof, lifts means for raising and tilting a refuse container containing refuse whereby the contents of said container are discharged through the top opening into the vehicle receptacle, and packer-ejector blade means for compacting said refuse, the improvement comprising:

a plurality of box-like elements hingedly attached in spaced apart relationship to an upper edge of the packer-ejector blade whereby said box-like elements pivot rearwardly when articles become jammed between the roof of the



vehicle receptacle and the box-like elements and upon drawing of the packer-ejector blade forwardly the articles are released into the vehicle receptacle; and

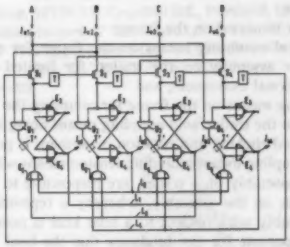
spring means for maintaining said box-like elements in vertical orientation relative to the upper edge of the packer-ejector blade.

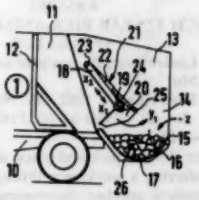
4,453,880

CONTROL DEVICE FOR A LOADING DEVICE FOR BULK GOODS CONTAINERS

Norbert Leisse, Denkendorf, Fed. Rep. of Germany, assignor to Fahrzeugbau Haller GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,357
Int. Cl.³ B65F *3/00*
U.S. Cl. 414—525 R **18 Claims**





1. Control arrangement for a loading device for bulk goods containers, in particular trash vehicle collecting containers with a loading chamber receiving the bulk goods and a motor driven feeding shovel which executes a movement cycle, for feeding the bulk goods from the loading chamber into the bulk goods container, which is separated into sequential movement phases which are initiated during the course of the movement cycle which actuates control members, characterized in that an electronic control device (**39**) is provided which actuates the control members (**33**) in dependency from electronic switches (**41***a, b*; **43**) which react to operating conditions of the loading

device, and that the electronic control device (39) is provided with an arrest circuit (FIG. 15) which reacts only to the switch pulse of the next following switch in the movement cycle, after receiving the switch pulse (J_{e1}' J_{e2}, J_{e3}, J_{e4}) of a switch (41*a, b*; 43), and leaves all other remaining switches unaffected so that in the event that one of the remaining switches emits an incorrect switch pulse or signal the arrest circuit assures that the feeding shovel cannot execute an inadmissible movement cycle.

4,453,881

ROLLER ASSEMBLY

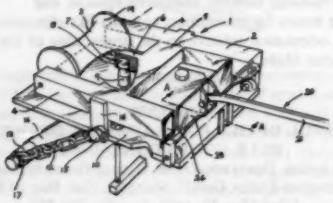
Keith Cowley, 4 Arthur Pl., Croydon, Victoria, Australia

Filed Aug. 12, 1981, Ser. No. 292,244

Claims priority, application Australia, Aug. 15, 1980, PE5056

Int. Cl.³ B60F *3/10*

U.S. Cl. 414—534 **11 Claims**



1. A roller assembly for mounting on a boat trailer comprising:

a frame;

a roller mounted on the frame;

universal mounting means on the frame for mounting the roller assembly on the trailer, for limited rocking and rotational movement; and

coupling means on the frame for coupling the roller assembly to the trailer, said coupling means being such that said limited rocking and rotation movement is permitted;

said coupling means including tension means which, in use of the assembly on a trailer, are responsive to load bearing forces on the assembly, whereby a repositioning of the assembly with respect to a boat keel is possible so as to compensate for any tendancy that the boat may have to run off one end of the roller.

4,453,882

LONGREACH LINEAR PICK-AND-PLACE ASSEMBLY APPARATUS

Josef Mang, Lindenhurst, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 27, 1982, Ser. No. 372,319

Int. Cl.³ B65G *65/00*; F16H *25/12*

U.S. Cl. 414—728 **6 Claims**

1. A power driven, pick-and-place assembly apparatus for linearly transferring a workpiece through an elongated reach from one station to another, the apparatus comprising:

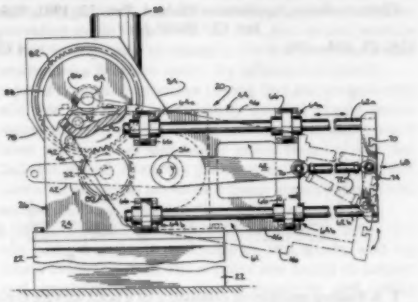
intermittent motion drive means having a rotating output crank arm operable to stop at multiple locations;

pivot plate means rotatably mounted to said intermittent motion drive means and operable to be drivably pivoted about the axis of rotation of said output crank arm;

slide linkage means carried by said pivot plate means and comprising elongated slide rod means slidably received for linear reciprocation within bushing means supported by said pivot plate means, said slide rod means characterized as being pivotally connected to said output crank arm; and

cam drive means interconnected to said pivot plate means and operable to drivably oscillate the same between respective angularly rotated positions;

whereby rotation of said output crank arm of said intermittent motion drive device causes said slide rod means to be



linearly reciprocated between respective positions, while operation of said cam drive means further causes said pivot plate means and said bushing means and slide rod means carried thereby to be rotatably oscillated.

4,453,883

INDUSTRIAL ROBOT

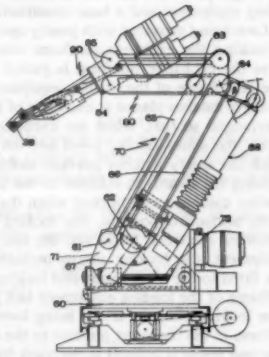
Luciano Bisiach, Strada S. Vito-Revigliasco 350, Turin, Italy

Filed May 24, 1982, Ser. No. 381,157

Claims priority, application Italy, Feb. 5, 1982, 67136 A/82

Int. Cl.³ B25J *17/02*

U.S. Cl. 414—735 **6 Claims**



1. An industrial robot having a plurality of axes of movement and comprising: a moveable base; a first angularly movable parallelogram linkage mounted for pivotal movement on a fixed support of said base; a second angularly movable parallelogram linkage mounted for pivotal movement on top of said first parallelogram linkage; a fixed toolholder head support connected to a distal end of said second parallelogram linkage, a fixed focus toolholder head capable of carrying out two angular movements and connected to said fixed toolholder head support, and a toolholder pivotally mounted at a distal end of said toolholder head, characterized in that said toolholder head further comprises a threaded shaft having a first portion coupled to a first lead nut for imparting translating movement to a first pair of parallel levers and a second portion coupled to a second lead nut for imparting translating movement to a second pair of parallel levers, said first portion of said threaded shaft having a length and pitch about twice the length

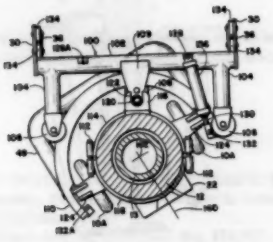
and pitch of said second portion, said pairs of parallel levers supporting at their distal ends said toolholder, and a tubular rotatable jacket extending coaxially of and surrounding said threaded shaft and provided with guide means engaging guide members on said pairs of levers to produce relative movement of the latter and thereby an angular displacement of said toolholder about its longitudinal axis and a fixed point of focus.

4,453,884

HOOK ROTATING MECHANISM

Howard S. Gudgel, Tulsa, Okla., assignor to Zena Equipment, Inc., Tulsa, Okla.

Filed Aug. 20, 1982, Ser. No. 410,088
Int. Cl.³ F16L 3/10
U.S. Cl. 414—745 **4 Claims**



1. For use in a rotary drilling apparatus having a rotary table and a pair of spaced vertical guide cables, an improved lifting means comprising:

a hook body;

guide means attached to said hook body cooperating with the guide cables to maintain said hook body directly above the axis of said rotary table as it travels vertically, and to maintain a fixed azimuth;

hook means supported by said hook body and rotatable about a vertical axis with respect to said hook body;

rotatable coupling means having two relatively rotatable parts, a first part attached to said hook means, the second part attached to said guide means and said hook body; and

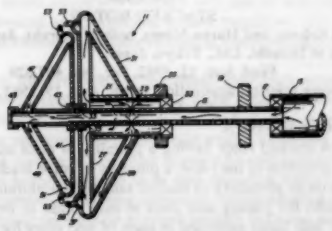
drive means between said first and second parts of said coupling means to rotate said hook with respect to said hook body through a selected angle.

4,453,885

COUNTER DEFLECTION TORQUE DEVICE

John D. Denton, Rte. 209, Box 201, Green Cove Springs, Fla. 32043

Filed Jun. 25, 1982, Ser. No. 391,990
Int. Cl.³ F01D 1/18
U.S. Cl. 415—63 **3 Claims**



1. A counter rotating engine comprising:

(a) a first rotatable annular conduit;

(b) a second rotatable annular conduit disposed adjacent to said first rotatable annular conduit;

(c) a first plurality of substantially tangential jets disposed on and in communication with the interior of said first rotatable annular conduit said first plurality of jets defining a first circular path when said first rotatable annular conduit rotates;

(d) a second plurality of substantially tangential jets disposed on and in communication with said second rotatable annular conduit said second plurality of jets defining a second circular path when the second annular conduit rotates, and said second plurality of jets being disposed relative to said first plurality of jets so that the first and second circular paths coincide;

(e) a first hollow rotatable shaft adapted to conduit high pressure working fluid, said shaft having a plurality of radial openings along a predetermined longitudinal segment;

(f) a second hollow rotatable shaft disposed substantially concentric with and surrounding the predetermined longitudinal segment of the first hollow shaft;

(g) first means for coupling said second hollow shaft to said first annular conduit; and

(h) second means for coupling said first hollow shaft to said second annular conduit;

(i) a hollow disk attached to one end of said second hollow shaft said hollow disk disposed in communication with said first annular conduit; and

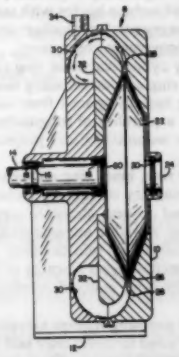
(j) a plurality of hollow stabilizing conduits each being attached at one end to the second hollow shaft and at the other end to the hollow disk.

4,453,886

CENTRIFUGAL VENTURI

Elwin R. Wilson, 10130 SE. Cresthill Rd., Portland, Oreg. 97266

Continuation-in-part of Ser. No. 11,535, Feb. 12, 1979, abandoned. This application May 4, 1981, Ser. No. 260,119
Int. Cl.³ F04D 29/30, 17/14
U.S. Cl. 415—83 **9 Claims**



1. A centrifugal pump-compressor for fluids, comprising:

chamber forming means adapted to rotate about a predetermined axis and form a chamber;

vane means extending radially with respect to said axis and adapted to impel a fluid at least in the radial direction of said chamber, said vane means inducing a primary flow of said fluid through said chamber;

a plurality of venturi means disposed in said chamber and adapted to receive said primary flow, said primary flow being accelerated and subsequently decelerated as it passes through said venturi means, said venturi means being disposed serially outwardly of said chamber means in the direction of said primary flow;

a diffusing sink positioned intermediate adjacent venturi means for receiving fluid passing therethrough, said fluid passing through each said venturi means being decelerated in the immediately outwardly adjacent diffusing sink, whereby the energy of said fluid is converted successively from kinetic to potential forms as it passes through said chamber; and

said venturi means overlapping to form a channel therebetween, the increased velocity of said fluid as it passes through said venturi means inducing additional fluid to flow through said channel, said additional fluid flowing into said diffusing sink.

4,453,887

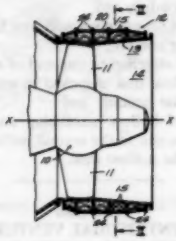
VIBRATION-DAMPENED DISCHARGE RING FOR BULB HYDRAULIC TURBINES

Thomas R. Schucker, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 7, 1981, Ser. No. 327,924

Int. Cl.³ F01D *5/10*; F03B *11/04*

U.S. Cl. 415—119 **4 Claims**



1. A discharge ring for a hydraulic turbine having a rotary runner hub with a generally horizontal axis of rotation; a plurality of turbine blades extending radially from said runner; said discharge ring having a generally cylindrical inner ring surrounding said turbine blades with said inner ring defining a hydraulic passageway for guiding water past said turbine blades; the improvement comprising:

a. a generally cylindrical outer ring of greater diameter than said inner ring and surrounding said inner ring; said outer ring being radially spaced from said inner ring and supported by a plurality of longitudinal and circumferential spacer ribs mounted on and projecting radially from said inner ring;

b. said outer ring, inner ring and spacer ribs cooperating to define a plurality of cavities including highest elevation cavities and lowest elevation cavities within said discharge ring; vibration attenuation means comprising granular material within said cavities;

c. means formed within a plurality of said spacer ribs permitting gravity flow material communication between said cavities;

d. means for exposing highest elevation cavities comprising a fill plate sized to cover only said highest elevation cavities and means to removably secure said fill plate to said outer ring to complete said outer ring to cover said highest elevation cavities; and

e. means for exposing said lowest elevation cavities comprising a discharge plate sized to cover said lowest elevation cavities and means to removably secure said discharge plate to said outer ring to complete said outer ring to cover said lowest elevation cavities whereby said highest elevation cavities may be exposed and said lowest elevation cavities unexposed to permit filling the cavities with said material by admitting said material to said highest elevation cavities with said material flowing by means of gravity to the cavities to increase the mass of said ring and said material may be discharged from said ring by exposing said lowest elevation cavities to decrease the weight of said ring and facilitate removal and maintenance of said ring.

4,453,888

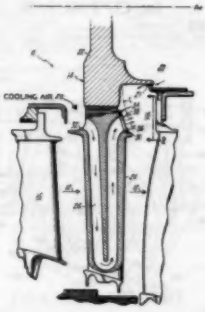
NOZZLE FOR A COOLABLE ROTOR BLADE

Edward J. Hovan, and Richard R. Neumayer, both of Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 1, 1981, Ser. No. 249,767

Int. Cl.³ F01D *5/18, 25/18*

U.S. Cl. 416—97 R **7 Claims**



1. In an axial flow gas turbine engine of the type having an axis of rotation and an annular flow path for working medium gases bounded on the inward side by a stator assembly and a rotor stage assembly wherein the rotor assembly is spaced axially from the stator assembly to form a circumferentially extending cavity therebetween which is supplied with purge air and wherein the rotor assembly is formed of a rotor disk having a rim region and a plurality of coolable rotor blades extending outwardly from the rim region of the rotor disk across the working medium flow path each blade having a root inwardly of the working medium flow path and adjacent to the purge air cavity in the region

where a boundary layer is formed by the purge air on the rotor disk, the improvement which comprises:

nozzle means fixed to the rotor blade and adjacent the boundary layer for metering the flow of cooling air through the rotor blade and directing cooling air which is discharged from the root of the rotor blade axially through the boundary layer into the cavity and radially inwardly toward the axis of the engine such that the air discharged from the root of the rotor blade interferes with the formation of the purge air boundary layer.

4,453,889

STACKED ROTOR

Sooji Sakata, and Haruo Miura, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,628

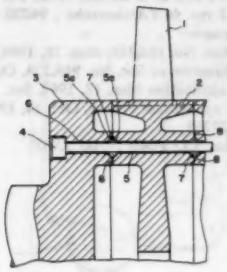
Claims priority, application Japan, Aug. 19, 1981, 56/128753

Int. Cl.³ F01D *5/06*

U.S. Cl. 416—198 A **9 Claims**

1. A stacked rotor having a plurality of discs stacked in an axial direction of the rotor, a plurality of rotor blades provided on an outer periphery of each of said discs, a plurality of stacking bolts for joining said discs to each other to form a single body, bolt holes provided in each of said discs for accommodating the stacking bolts, each of said bolt holes including tapered surface portions formed along inner peripheral surfaces of adjacent discs at a juncture between said adjacent

discs, and bolt deformation resisting members each having an outer peripheral surface adapted to fit said tapered surface



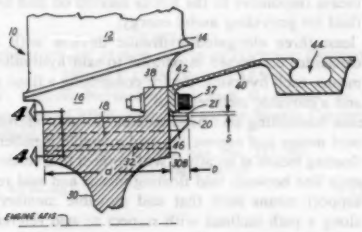
portions in said bolt holes of adjacent discs and an inner peripheral surface adapted to closely fit around said stacking bolt.

4,453,890

BLADING SYSTEM FOR A GAS TURBINE ENGINE

James W. Brantley, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 18, 1981, Ser. No. 274,927
Int. Cl.³ B63H *1/20*; B64C *11/04*
U.S. Cl. 416—220 R **8 Claims**



1. In a gas turbine engine including a circumferential blade retaining member having a plurality of generally axial dovetail receving slots of a predetermined axial length therein for matingly engaging blades of the type having an airfoil portion, a shank portion and a generally axial dovetail portion, said dovetail portion having opposing forward and aft faces and a length between said opposing faces substantially equal to the predetermined axial length of said dovetail engaging slots, wherein the improvement comprises in combination:

(a) cleat means physically coupled with one of said faces of said dovetail and projecting axially therefrom, said cleat means including an axially extending load-bearing surface, and

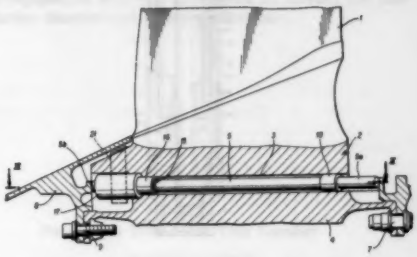
(b) means for providing a redundant load path securably coupled to said circumferential blade retaining member, said redundant load path means including a receiving surface positioned to receive said axially extending load-bearing surface of said cleat means with said load-bearing surface being separated from said receiving surface by a predetermined operating clearance, said operating clearance being selected to prevent contact between said receiving and said axially extending load-bearing surfaces during normal engine operation, but permit contact between said surfaces during blade-out impact loading.

4,453,891

VIBRATION DAMPING DEVICE, ESPECIALLY FOR A BLADE OF A TURBOJET ENGINE

Alexandre Forestier, Vaux le Penil, France, assignor to S.N.E.C.M.A., Paris, France

Filed Jun. 25, 1982, Ser. No. 392,225
Claims priority, application France, Jun. 25, 1981, 81 12459
Int. Cl.³ F01D *5/10*
U.S. Cl. 416—220 R **7 Claims**



1. A device for absorbing play of a fan vane having a shank positionable within an axial dovetail slot of a rotor support disk, said device comprising:

a torsion bar positionable in a portion of said slot beneath the bottom of said shank;

first cam means fixed to one end of said torsion bar and resting against said shank for preventing rotation of said torsion bar relative to said shank; and

second cam means fixed to a second end of said torsion bar and resting against said shank, said second cam means being fixed to said torsion bar in a position such that said torsion bar is maintained in torsional stress,

wherein said second cam means comprise a casing axially slidably mounted on said second end of said torsion bar and an outwardly extending off-center boss formed on said casing, said boss resting against said shank,

whereby said torsional stress presses said first and second cam means against said shank so as to absorb play of said shank relative to said slot.

4,453,892

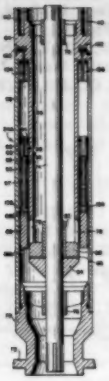
SUBMERGIBLE PUMP INSTALLATIONS

Earl B. Brookbank, III, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Filed Jul. 6, 1981, Ser. No. 280,793
Int. Cl.³ F04B *49/00*, *39/08*; F16K *31/12*
U.S. Cl. 417—279 **10 Claims**

1. A discharge assembly in a downwell submergible pump installation including port means through which pumped liquid is adapted to flow from a pump discharge through the assembly, movable valve means for opening and closing the port means, and control means that positions the valve means relative to the port means in accordance with the relationship between liquid pressure at the pump discharge, urging the valve means to open the port means, and a reference pressure, urging the valve means to close the port means, the reference pressure being independent of downwell environmental pressure, said control means positioning the valve means relative to the port means when the pump is not operating so as to substantially impede the pump discharge through the assembly when the pump is started and to provide suitable back pressure at the pump discharge for satisfactory start-up of the pump,

and said control means positioning the valve means relative to the port means to open the port means fully when the pump has



been operating for a sufficient period to overcome said reference pressure.

4,453,893

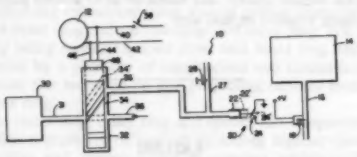
DRAINAGE CONTROL FOR COMPRESSED AIR SYSTEM

Marlin L. Hutmaker, 420 N. 6th St., Wahpeton, N. Dak. 58075

Filed Apr. 14, 1982, Ser. No. 368,135

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—279 **10 Claims**



1. In combination with a compressor system having a compressor motor and a compressed air tank, said tank containing a drain line, an apparatus for controlling drainage of said tank through said line, comprising:

valve means connected in said drain line for opening and closing said drain line;

timer means connected to said valve means for actuating said valve means, said timer means comprising: an air storage tank, an air bleed valve for bleeding said air storage tank, and valve control means for actuating said valve means in response to air pressure from said air storage tank; and

timer control means responsive to operation of said compressor motor for alternately connecting said air storage tank to either said air bleed valve and said valve control means, or to a compressed air source driven by said motor for filling said storage tank and said compressed air tank, wherein said valve means comprises an electrically operated solenoid valve, and said valve control means comprises a pneumatically operated switch connected to said solenoid valve.

4,453,894

INSTALLATION FOR CONVERTING THE ENERGY OF THE OCEANS

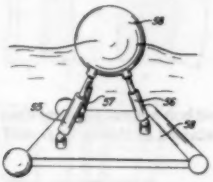
Gabriel Ferone, 16 Place de la nation, 75012 Paris, and Ferdinand Ferone, 12 rue de l'Archeveché , 94220 Charenton le Pont, both of France

Continuation of Ser. No. 182,131, Aug. 28, 1980, abandoned, which is a continuation of Ser. No. 949,274, Oct. 6, 1978, abandoned. This application Mar. 18, 1982, Ser. No. 359,358

Claims priority, application France, Oct. 14, 1977, 77 30924; Sep. 22, 1978, 78 27269

Int. Cl.³ F04B *17/00, 35/00*

U.S. Cl. 417—332 **5 Claims**



1. An installation for exploiting the energy of oceans comprising:

floating means located at the ocean surface and subjected to the effect of ocean weight;

reference support means in the form of a large flat member extending horizontally at a location spaced from both the ocean bottom and the surface at a sufficient depth to be substantially unaffected by ocean waves;

hydraulic circuit means containing a hydraulic fluid and means responsive to the forces exerted on said hydraulic fluid for providing useful energy;

at least three elongated hydraulic devices with variable capacities connected in parallel to said hydraulic circuit means, each hydraulic device comprising a fixed member and a movable member; and

means connecting said fixed member to said reference support means and connecting said movable member to said floating means at locations with respect to a vertical reference line between said floating means and said reference support means such that said movable members move along a path inclined with respect to said reference line and are spaced equally distributed about said reference line.

4,453,895

WINDSCREEN WASHER UNIT

Klaus Hauk, Altrip, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jun. 28, 1982, Ser. No. 392,447

Claims priority, application European Pat. Off., Jul. 1, 1981, 81303009.5

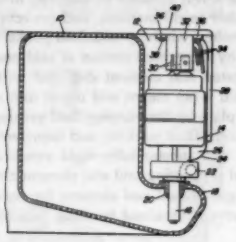
Int. Cl.³ F04B *35/04;* B60S *1/46*

U.S. Cl. 417—422 **7 Claims**

1. In a windscreen washer unit having a water container with a recessed sidewall accommodating an electric pump having an inlet tube plugged into a lower part of the container and an electrical connector in plug-in engagement with terminals on top of the electric pump, a protective plate comprising:

a cover plate carried on top of the electrical connector and cooperating with the recessed sidewall to protect the pump, the cover plate having at least one snap coupling part complementary to a snap coupling part on the electri-

cal connector, whereby the snap coupling can be made between the connector and plate to fix the plate in a position substantially in line with a top surface of the container.

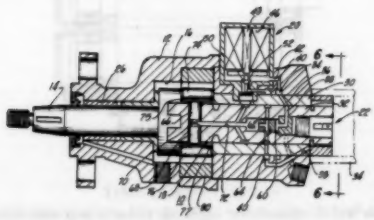


4,453,896

DISTRIBUTOR PUMP WITH FLOATING PISTON SINGLE CONTROL VALVE

Louis V. Vilardo, Northville, and Jack R. Phipps, St. Clair Shores, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1980, Ser. No. 217,296
Int. Cl.³ F04B 19/02
U.S. Cl. 417—462 8 Claims



1. A distributor pump for controlling the injection of fuel into individual cylinders of an internal combustion engine comprising a housing, an input shaft supported for rotation in said housing, a pressurized source of fuel, a timing and metering assembly having a body and a cavity formed therein, a floating piston in said cavity forming a timing chamber and a metering chamber in said cavity on either side of said floating piston, said body having a metering passage formed therein for communicating said metering chamber with the exterior surface of said body, said assembly being rotated by said shaft, a sleeve fixedly supported in said housing having a first set of metering and discharge ports formed therein, one metering port and one discharge port for each cylinder, said metering passage being rotated, in succession, from a metering port to a discharge port, an electromagnetically responsive control valve having two states, one state controlling the metering of fuel into said timing chamber and the other controlling the premetering of fuel into the metering chamber, cam means supported in said housing, and means supported in said assembly in engagement with said cam means for forcing fuel into said timing chamber and initiating injection.

4,453,897

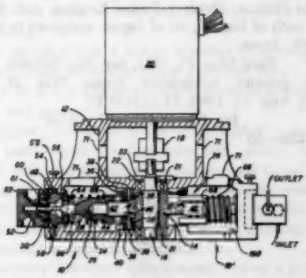
Patent Not Issued For This Number

4,453,898

DUAL-PISTON RECIPROCATING PUMP ASSEMBLY

George T. Leka, Trumbull, and Roland C. Paradis, Bridgeport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 189,547, Sep. 22, 1980, abandoned, which is a division of Ser. No. 014,514, Feb. 22, 1979, Pat. No. 4,260,342, which is a division of Ser. No. 820,592, Aug. 1, 1977, Pat. No. 4,173,437. This application Dec. 2, 1982, Ser. No. 446,137
Int. Cl.³ F04B 39/00, 27/02
U.S. Cl. 417—521 4 Claims



1. A dual-piston reciprocating pump assembly comprising two opposed substantially identical reciprocating pumps, a housing in which said pumps are mounted, a motor, a flexible coupling, a cam shaft, and a cam, said cam being mounted on the cam shaft which is driven through the flexible coupling by the motor, the cam face of said cam being contoured to produce a piston displacement with respect to cam angle according to the following:

CAM ROTATION	FOLLOWER DISPLACEMENT EQUATION
0-30°	$y = 4h\left(\frac{\theta}{60°}\right)^2$
30°-180°	$y = h + \frac{(h_1 - h)(\theta - 30°)}{150°}$
180°-210°	$y = 2h\left(1 - 2\left[1 - \frac{(\theta - 150°)}{60°}\right]^2\right) + h_1 - h$
210°-215°	$y = h_2$ dwell (continuous maximum displacement)
215°-345°	$y = h_2 - \left(\frac{h_2}{\pi}\left[\frac{\pi(\theta - 215°)}{130°} - \frac{1}{2}\sin\frac{2\pi(\theta - 215°)}{130°}\right]\right)$
345°-360°	$y = 0$ dwell (continuous no displacement)

where:

y = follower displacement

h = follower displacement for cam rotation of 30°

h_1 = follower displacement for cam rotation of 180°

h_2 = follower displacement for cam rotation of 210° (maximum displacement for entire cycle)

θ = cam angle of rotation for a follower displacement y, in degrees.

4,453,899

SCROLL TYPE FLUID DISPLACEMENT APPARATUS WITH REINFORCED WRAP SEALS

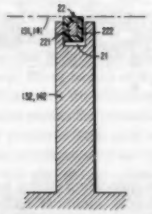
Masaharu Hiraga, Honjyo; Tadao Kogima, and Nobuaki Sagusa, both of Isesaki, all of Japan, assignors to Sanden Corporation, Japan

Filed May 27, 1981, Ser. No. 267,456

Claims priority, application Japan, May 31, 1980, 55-74643[U]; Aug. 13, 1980, 55-115455[U]

Int. Cl.³ F01C *1/02, 19/08*

U.S. Cl. 418—55 **19 Claims**



1. In a scroll type fluid displacement apparatus including a pair of scroll members each comprising an end plate and a spiral wrap means extending from one surface of said end plate and provided with a groove which is formed in the axial end surface thereof along the spiral curve, both wrap means interfitting at an angular offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, drive means operatively connected to one of said scroll members to cause said one scroll member to undergo orbital motion relative to the other scroll member, and prevent rotation of said one scroll member, whereby said fluid pockets change volume and pressure by the orbital motion of said one scroll member, and an elongated seal element disposed within each of said grooves of said wrap means and urged into contact with the adjacent end plate by the varying fluid pressure in the groove from the adjacent fluid pockets, and improvement comprising an elongated and substantially rigid reinforcement member secured to and supporting said seal element along substantially the entire length of said seal element for rigidifying said seal element to prevent localized bending thereof and effect uniform sealing.

4,453,900

VALVE SYSTEM FOR CAPACITY CONTROL OF SCREW COMPRESSORS

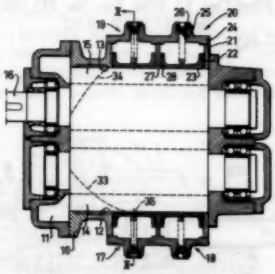
Lars Schibbye, Älgvägen, and Arnold Englund, Sandkullsvägen, both of Sweden, assignors to Sullair Technology AB, Stockholm, Sweden

Filed May 6, 1982, Ser. No. 375,758

Claims priority, application Sweden, May 14, 1981, 8103032

Int. Cl.³ F01C *1/16*

U.S. Cl. 418—99 **19 Claims**

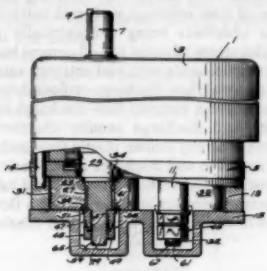


1. A valve system for capacity control and unloading of oil-injected gas compressors of screw compressor type, at which at least one valve is provided to be connected to that portion of the rotor bores (**12, 13**) which constitutes the cylindric walls of the compression spaces, said valve constituting a portion of said cylindric walls of the compression spaces in its closed position and which can be opened for establishing a continuous connection between pairs of consecutive thread volumes (**30**) of one of the rotors, characterized in that each valve is of piston-type movable in a cylindric bore radially to the rotor bores and that a first of said valves (**17**) is so positioned that its centre line substantially intersects the line (**33**) which corresponds to the closing position of the inlet port in one rotor bore.

4,453,901
POSITIVE DISPLACEMENT PUMP

Robert D. Zimmerly, Kenosha, Wis., assignor to Ladish Co., Cudahy, Wis.

Filed Feb. 28, 1983, Ser. No. 470,034
Int. Cl.³ F04C 2/00; F01C 1/24
U.S. Cl. 418—206 15 Claims



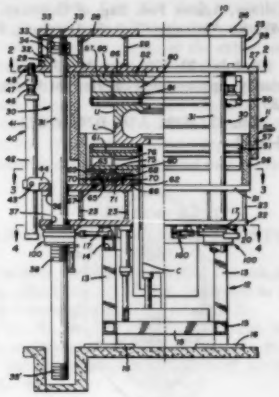
1. A positive displacement pump having walls defining the generally oval pumping chamber with circular end walls merging with intermediate walls generally parallel to a longitudinal center line, and inlet and outlet passages communicating with the pumping chamber, a pair of impellers operatively associated with said circular end walls to define a first clearance zone spanning on both sides of the intersection of the center line with said circular end walls with said first clearance selected to minimize leakage and a second clearance zone along said curved walls adjacent said parallel walls with a second clearance to minimize wear caused by deflection, and wherein said curved end walls have a first center and said impellers have a second center, said second center being offset toward said curved end walls on said longitudinal center line from the end wall center to eccentrically locate said impellers with respect to the curved end walls to maintain a second clearance larger than said first clearance to afford deflection under pressure without interference between the impellers and said walls in said second zone.

4,453,902
TIRE CURING PRESS

Jean-Maurice Imbert, Akron, Ohio, assignor to McNeil-Akron, Inc., Akron, Ohio

Filed Aug. 4, 1983, Ser. No. 520,498
Int. Cl.³ B29H 5/02
U.S. Cl. 425—47 42 Claims

1. A tire curing press for manipulating mating mold sections comprising, base means, base beam means mounted on said base means and supporting one mold section for a tire thereon, cross beam means supportingly mounting the other mold section, means attached to and effecting relative movement between said base beam means and said cross beam means, connecting rod means for aligning and interconnecting said base beam means and said cross beam means, bolster means positioned between each said beam means and the respective mold section, and means interposed between each said beam means and the respective bolster means for applying mold section

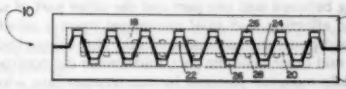


sequeeze forces at locations on each of said bolster means producing substantially uniform loading on the mold sections.

4,453,903
INSERT MOLDING GATE DESIGN FOR ENCAPSULATING ELECTRONIC CERAMICS WITH THERMOPLASTIC MATERIALS

Clifford J. Pukaite, Mequon, Wis., assignor to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 254,571, Apr. 15, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 476,973
Int. Cl.³ B29C 1/00; B29D 3/00; B29F 1/10
U.S. Cl. 425—117 1 Claim



1. An insert molding gate for completely encapsulating leaded electronic ceramic substrates with thermoplastic materials comprising:

an upper member and a lower member of said gate, said members being separable along a parting line;

said upper and said lower members defining a mold cavity within said gate;

complementary sawtooth edges comprised of a plurality of teeth, each tooth having truncated peaks, integrally formed with and dividing one side of said upper and said lower gate members such that the truncated peaks of said teeth define small orifices along said parting line to serve as a lead clamp comb for gripping the terminal leads of said electronic ceramic substrates;

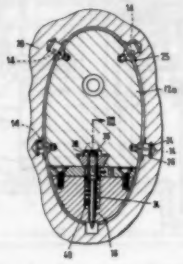
complementary sawtooth edges comprised of a plurality of teeth, said edges integrally formed with and dividing said upper and lower gate members along a section of said parting line of the side of said upper and lower gate members opposed to said lead clamp comb, configured such that peaks of alternate teeth of said edges extend above and below said parting line of said gate, said teeth being truncated to define orifices on both sides of said parting line near the edges of said cavity, said orifices positioned such that said orifices permit the injection of thermoplastic material on all free sides of said electronic ceramic substrate to effect the complete encapsultation thereof.

4,453,904

INJECTION MOLD DEVICE FOR FORMING AN ARTICLE SUCH AS FOOTWEAR

Wolfgang Kollwer, Achim, Fed. Rep. of Germany, assignor to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,652
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236933
Int. Cl.³ B29C 1/06; B29F 1/022
U.S. Cl. 425—119 5 Claims



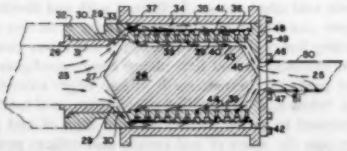
1. An injection mold device for forming an article such as footwear from plastic material, comprising a two-part male die such as a boot last, a fabric liner covering said male die, a split female die surrounding said male die in spaced relation and forming together therewith a mold cavity for the article terminating inwardly adjacent an upper free end of said liner, a plurality of pins mounted in said male die and having tips projecting outwardly of the peripheral wall of said male die and through said liner for retaining same in place during an injection molding operation, said pins being located adjacent said upper end of said liner, one of said pins being mounted in one of the parts of said male die for retracting axial movement for disengaging the tip thereof from said liner, cooperating means acting between said one part and the other part of said male die for effecting said axial movement upon a relative shifting of said parts, the remainder of said pins being rigidly mounted in said other male die part, said female die confronting said rigidly mounted pins and having recesses into which said tips thereof project, said female die further having undercuts at said recesses and grooves extending between said recesses and the mold cavity to facilitate filling said recesses and undercuts with the plastic material so as to form plastic plugs which adhere to said liner, whereby said plugs and said liner adhering thereto are removable from said rigidly mounted pins upon removal of said female die from the article after forming, and said plugs are separable from said female die at said removal thereof.

4,453,905

PLASTICS RECYCLING APPARATUS

Bobby B. Bennett, Rte. 9, Box 130, Reidsville, N.C. 27320

Filed Jun. 1, 1983, Ser. No. 499,835
Int. Cl.³ B29F 3/04
U.S. Cl. 425—192 R 7 Claims



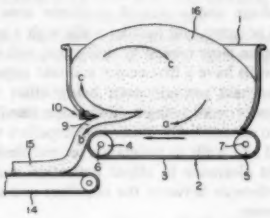
1. A plastic recycling apparatus comprising; an elongated tubular body for conducting material flow, a core member in said tubular body having a leading conical head for diverting material flow, a series of circumferentially-spaced inlet openings in said tubular body downstream of said conical head, a circumferential housing enclosing said inlet openings and forming an entrance annular chamber for material flow therebetween, a discharge annular chamber between said core member and said tubular body interior for receiving material flow from said series of inlet openings with said entrance and discharge annular chambers being concentrically positioned, material flow inlet means adjacent to said conical head and said tubular body communicating with said entrance annular chamber, a series of material flow discharge orifices downstream of said tubular body, and a material flow discharge means communicating with said discharge annular chamber and said discharge orifices whereby molten plastic flow under pressure from said inlet means to said discharge orifices extrude plastic ribbons for quenching and cutting for reuse, said tubular body having filter means thereover and there being a flow path for but a single pass of said material through said tubular member.

4,453,906

APPARATUS FOR CONTINUOUSLY DISCHARGING DOUGH TO PRODUCE A WEB OF DOUGH SHEET

Torahiko Hayashi, 3-4, Nozawa-machi, Utsunomiya-shi, Tochgiken, Japan

Filed Aug. 2, 1982, Ser. No. 404,469
Claims priority, application Japan, Aug. 1, 1981, 56-122736
Int. Cl.³ A21C 3/04; B29D 7/02
U.S. Cl. 425—224 6 Claims



1. An apparatus for continuously discharging dough through a gap to produce a web of dough sheet, characterized by a hopper having peripheral side walls, for receiving dough to be supplied therein, said gap being provided at a lower portion of one of said side walls, a conveying mechanism a part of which is adapted to serve as the bottom wall of said hopper, and a cutter provided at the upper inner end of said gap so as to be directed inwardly of the hopper and positioned opposite to and substantially parallel to a portion of said part of the conveying mechanism, said part of the conveying mechanism being adapted to be moved in the direction opposite that of said inwardly directed cutter, said cutter comprises a stationary blade secured to a side wall of said hopper and a movable blade adapted to co-operate with said stationary blade to sever dough.

4,453,907

VARIABLE-TYPE BUBBLE WATER COOLING APPARATUS

Takeo Taguchi, Tokyo, Japan, assignor to Tomi Machinery Manufacturing Co., Ltd., Yokohama, Japan

Filed Apr. 20, 1983, Ser. No. 486,792
Claims priority, application Japan, Mar. 1, 1983, 58-28091[U]
Int. Cl.³ A01J 21/00
U.S. Cl. 425—326.1 1 Claim

1. Variable-type bubble water cooling apparatus in an apparatus for producing cylindrical film of thermoelastic resin comprising;

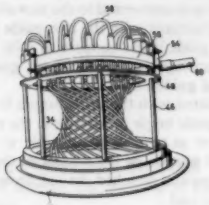
an annular water supply pipe,

a lower support ring which is attached to the water supply pipe and rotatably supports the lower ends of many curved cooling pipes,

an annular lower rotation ring which is rotatable in relation to the lower support ring,

an upper rotation ring which is opposed to the lower rotation ring in spaced relationship and rotatably supports the upper ends of many curved cooling pipes by way of numbers of link means,

a concentrated exit pipe which is united with the upper rotation ring and to which the upper ends of many curved cooling pipes are communicated by way of flexible pipes, numbers of curved cooling pipes of metal in which passes



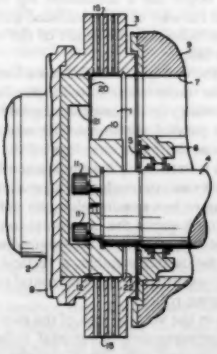
through the cooling water, the lower ends of them being rotatably supported by the lower support ring and communicated with the concentrated water supply pipe, the upper ends of them being rotatably supported by the upper rotation ring by way of link means and communicated with the concentrated exit pipe, so that the enveloping circle formed by peripheries of many curved cooling pipes at a determined horizontal position approximately in the middle of upper and lower rotation rings are almost true circle with regard to the center of apparatus, the diameter of enveloping circle being varied by relative rotation of lower and upper support rings, and the bubble which contacts and passes through the enveloping circle perpendicularly is cooled at a determined diameter of the circle.

4,453,908

PELLET MILL VOID SPACE FILLER

Odd M. Visser, El Cerrito, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Filed Apr. 21, 1983, Ser. No. 487,261
Int. Cl.³ B29F *3/012*
U.S. Cl. 425—331 **2 Claims**



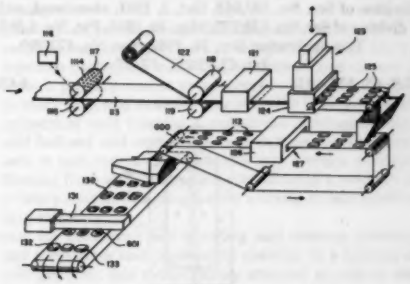
1. In a pellet mill having a generally cylindrical die provided with apertures therein for extruding material into pellets; at least one roller rotably mounted in a chamber for engagement with said die; a rotatable support for said roller disposed at, and connected to, and end of a roller shaft mounted for rotation along its longitudinal axis; a first closure means at one end of said die; a second closure means at the other end of the die having a feed inlet and passage for said roller shaft therethrough; said cylindrical die, said first closure means and said second closure means forming said chamber; the space between said first closure means and said cylindrical die defining a void space; the improvement comprising a space filler means in said chamber to occupy a substantial part of said void space.

4,453,909

APPARATUS FOR MAKING SOAP WITH PERFUMED INSERT

Jerome I. Lindauer, Hillsdale; Ira D. Hill, Locust, and Arthur L. Liberman, Highlands, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 362,263, Mar. 26, 1982, Pat. No. 4,438,010.
This application Jun. 16, 1983, Ser. No. 505,422
Int. Cl.³ B29C *3/00*; B29D *3/00, 31/00*
U.S. Cl. 425—511 **2 Claims**



1. An apparatus useful for carrying out a process for molding aromatized and aromatizing core-containing detergent bars comprising:

1. means for producing aromatized plastic pellets;
2. associated with said means for producing said aromatized plastic pellets, and operating simultaneously therewith, means for forming the aromatized plastic pellets into aromatized plastic cores;
3. associated with said means for forming the aromatized plastic pellets into aromatized plastic cores and operating simultaneously therewith, means for casting a detergent around the aromatized plastic cores in the liquid phase and means associated with the casting means and operating simultaneously therewith for cooling the resulting liquid detergent cast around the plastic cores.

4,453,910

PORTABLE HANDRAIL SPLICING AND REPAIR APPARATUS

Ronald H. Ball, 322 Fairall St., Ajax, Ontario, Canada

Filed Oct. 7, 1983, Ser. No. 540,058
Int. Cl.³ B29C *1/00*
U.S. Cl. 425—12 **7 Claims**

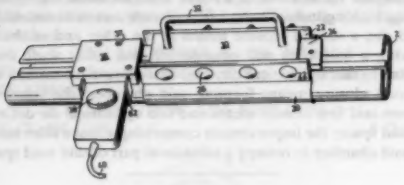
1. A portable apparatus for heating and molding flexible handrails having an internal surface configuration and a curved external surface configuration comprising;

an elongated core having a cross-sectional shape conforming to the cross-sectional shape of the interior surface configuration of said handrail;

means for heating said core to a desired temperature;

an elongated outer cover comprising a flexible sheet detachably attachable to said core and adapted to conform to the

curved cross-sectional shape of said external surface of said handrail;



means for attaching said cover to said core and holding same in a configuration conforming substantially to the external shape of said handrail.

4,453,911

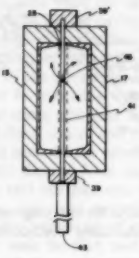
BLOW MOLD

Keith M. Watson; Floyd L. Jones, and Dwight V. Adams, all of Roanoke Rapids, assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 307,965, Oct. 2, 1981, abandoned, which is a division of Ser. No. 133,777, Mar. 26, 1980, Pat. No. 4,382,058. This application Sep. 24, 1982, Ser. No. 422,790

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—525 **4 Claims**



1. A blow mold comprising first and second mateable mold sections adapted to define, when mated together:

an interior comprising upper and lower major cavities connected by a minor cavity which necks between said major cavities;

a hinge bar insertable through said mold sections and through said interior wherein passage of said hinge bar through said interior is limited to said minor cavity;

whereby said hinge bar and portions of said first and second mold sections which define said minor cavity are adapted to compression mold a a portion of a parison between said first mold section and said hinge bar and said second mold section and said hinge bar.

4,453,912

ADJUSTABLE ROLLER TRACK BOGIES FOR DIE CARRIER FRAME OF INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,260

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 32101784; Oct. 14, 1981, 3140740

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—589 **20 Claims**

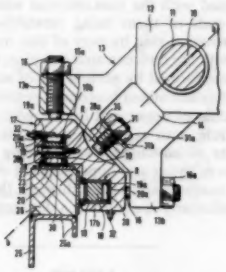
1. In an injection molding machine in which a machine base carries a die closing unit which opens and closes along a substantially horizontal movement axis and which includes a stationary die carrier member to which is attachable the stationary half of an injection molding die, a movable die carrier member to which is attachable the movable half of said die, and a set of parallel substantially horizontally extending tie rods which determine said movement axis by reaching through the movable die carrier member so as to position and guide the latter, the combination therewith of an adjustable exterior support and guide arrangement for the movable die carrier member comprising:

two fixed guide rails arranged on the machine base in parallel alignment with the tie rods of the die closing unit, below and on laterally opposite sides of the movable die carrier member, the guide rails having horizontally oriented flat runways on their upper sides and substantially vertically oriented flat runways on their inner sides;

two guide bogies connected to the movable die carrier member and associated with the two guide rails in such a way that each guide bogie cooperates with the horizontal and vertical runways of the associated guide rail, to be supported and guided by the latter;

means associated with the guide bogies for vertically adjusting each guide bogie in relation to the movable die carrier member, so as to make it possible to transfer at least a substantial portion of the weight of the movable die carrier member and attached die half from the tie rods to the guide rails; and

means associated with the guide bogies for horizontally adjusting each guide bogie in relation to the movable die



carrier member, so as to make it possible to transfer at least a substantial portion of the lateral guidance interaction between the movable die carrier member and the machine base from the tie rods to the guide rails; and

wherein

each guide bogie has a horizontal leg extending over the horizontal runway of the associated guide rail and a vertical leg extending on the inside of the vertical runway of the guide rail;

each leg of the two guide bogies has a longitudinal recess of rectangular cross section with parallel flanks oriented perpendicularly to the associated guide rail runway and a bottom in parallel alignment with said runway;

the recesses in the horizontal legs of the two guide bogies hold each a vertical roller track assembly with a vertical roller track cassette enclosing an endless row of cylindrical bearing rollers moving along an oblong vertical recirculation track above the horizontal runway of the associated guide rail, so that, in all longitudinal positions of the movable die carrier member, a vertical load on the guide bogie is transmitted to said horizontal runway by a plurality of bearing rollers;

the recesses in the vertical legs of the two guide bogies hold each a corresponding horizontal roller track assembly with a horizontal roller track cassette enclosing horizontally recirculating bearing rollers which cooperate correspondingly with the vertical runway of the associated vertical guide rail;

each vertical roller track cassette includes a central track core with at least a lower roll face in parallel alignment with the horizontal runway and bearing against the force-transmitting rollers from the upper side, and two lateral track covers of generally rectangular outline engaging the vertical longitudinal sides of the track core, the track covers positioning the roller track assembly in the associated recess against the recess flanks while abutting vertically against the recess bottom with their upper longitudinal edges, so as to transmit bearing forces from the track core to the roller bogie; and

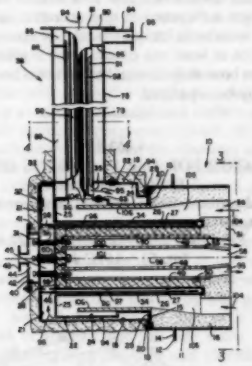
the horizontal roller track assembly has its roller track cassette correspondingly constituted and engaged in the recess of the vertical leg of the guide bogie.

4,453,913

RECUPERATIVE BURNER

Grigory M. Gitman, Atlanta, Ga., assignor to The Cadre Corporation, Atlanta, Ga.

Filed May 21, 1982, Ser. No. 380,560
Int. Cl.³ F23Q *9/00*
U.S. Cl. 431—8 **13 Claims**



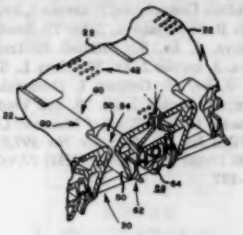
1. A heat recuperative burner comprising a central burner tube, an outer burner tube surrounding said central burner tube, said central and outer burner tubes being closed at one common end by a distribution plate and open at their other ends, an air supply plenum positioned adjacent said distribution plate, air passages extending from said air supply plenum through said distribution plate and into the closed end portions of said central and outer burner tubes, an air supply conduit surrounding said outer burner tube and communicating with said air supply plenum for moving air to said air supply plenum, an exhaust flue surrounding a portion of said air supply conduit for moving flue gases about and away from said burner, and fuel supply nozzles extending into the closed end portions of said central burner tube and said outer burner tube for delivering fuel to said burner tubes, whereby air is directed through said air supply conduit to the burner tubes and is preheated by heat emitted from the exhaust flue and the outer burner tube, fuel is directed through the fuel supply nozzles into the burner tubes and the gas and air is mixed and ignited in the burner tubes and exhausted from the delivery ends of the burner tubes, and flue gases are exhausted through the exhaust flue and heat the on-coming air.

4,453,914

LOW HEAT LOSS LASER COMBUSTION CHAMBER

Sam Huniu, Seal Beach, and William C. Bailey, Torrance, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 15, 1982, Ser. No. 449,921
Int. Cl.³ F23R *1/06*
U.S. Cl. 431—121 **10 Claims**



1. A low heat loss combustion chamber for use in a gas laser comprising:

a plurality of primary rings fixedly positioned to form a modular ring assembly, each of said primary rings having injection orifices for a fuel and an oxidizer and shaped to form a primary nozzle in cooperation with an adjacent primary ring, said modular ring assembly having an inside cylindrical wall forming a cylindrical combustion area, said fuel and said oxidizer reacting to form reaction products in said combustion area, and said reaction products flowing from said combustion area through a plurality of primary nozzles to a lasing cavity external to said modular ring assembly;

means for containing and directing said reaction products and supporting said combustion chamber in a housing of said gas laser, said means fixedly attached to ends of said modular ring assembly; and

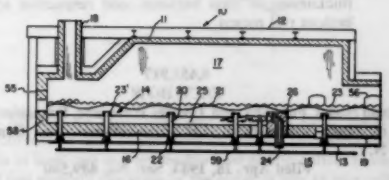
means for providing fluids to said modular ring assembly, the fluids including fuel and oxidizer.

4,453,915

METHOD AND APPARATUS FOR UNDERFIRING OIL COUNTRY TUBE REHEAT FURNACES

Harry P. Finke, Pittsburgh, Pa., and Robert A. Shannon, Avon Lake, Ohio, assignors to Bloom Engineering Company, Inc. and United States Steel Corporation, both of Pittsburgh, Pa.

Filed Aug. 25, 1982, Ser. No. 411,497
Int. Cl.³ F27D *3/00*; F27B *9/14*
U.S. Cl. 432—11 **9 Claims**



1. A method of retrofitting a top fired walking beam furnace having a furnace chamber including a limited space between the walking beam pass line and the furnace hearth and containing rows of movable and stationary beams to include underfiring comprising:

A. inserting at least one unitized bung of spaced burners into the space between the pass line and hearth and between the beams and transversely of and through the furnace floor, each burner including a right angle turn in said space; and

B. introducing fuel and combustion air into the burners and firing the burners into the furnace chamber substantially parallel with the pass line.

4,453,916

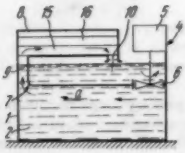
DEVICE FOR FUSION OF ELECTRODEPOSITED COATING OF PRINTED-CIRCUIT BOARDS

Anatoly A. Osipov, ulitsa Eizenshteina, 6, kv. 39; Vladimir V. Pomazkov, ulitsa Godovikova, 1, korpus 1, kv. 109; Nikolai S. Pekov, ulitsa B. Marlinskaya, 2, kv. 77; Anatoly S. Dubovik, ulitsa Bazhova, 4, kv. 87; Mikhail F. Tregubenko, ulitsa Shturvalnaya, 3, korpus 2, kv. 301; Jury L. Shvorobei, ulitsa Guryanova, 3, kv. 45; Grigory I. Dashevsky, ulitsa Vishnyakovskaya, 41, korpus 2, kv. 78, and Vladimir A. Iovlev, lazorevy proezd, 16, kv. 47, all of Moscow, U.S.S.R.

Filed Jul. 12, 1982, Ser. No. 397,511

Int. Cl.³ F27B *15/00*; **F24H** *3/02*; **C25D** *17/00*; **B23K** *31/02*

U.S. Cl. 432—197 **6 Claims**



1. A device for fusion of electrodeposited coatings on printed circuit boards, comprising

a receptacle containing a heat transfer medium;

means for conveying flow of the heat transfer medium out of said receptacle;

means for imparting a desired flow direction to the heat transfer medium, comprising

a chamber provided with first inlet and outlet openings for the heat transfer medium to pass through said chamber in the desired flow direction, and further provided with second inlet and outlet openings for the boards to pass through said chamber, said first and second openings situated to define substantially transverse directions of passage of the heat transfer medium and of the boards through said chamber; and

means for conveying the boards through said chamber, comprising

cooperatively acting top and bottom roll means,

said bottom roll means comprising means for conveying the boards substantially transversely relative to the direction of heat transfer medium flow, and

said top roll means mounted for movement in a direction substantially vertically, to allow boards of different thicknesses to pass between said respective top and bottom roll means.

4,453,917

FACE BOW

Etsuo Nodai, Fukuoka, and Takeshi Watanabe, Fukushima, both of Japan, assignors to GAC International, Inc., Commack, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,580

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—5 **3 Claims**

1. A facebow comprising:

a first bow-shaped member having means at the ends thereof for fastening to teeth to be moved in the mouth of a user;

a second bow-shaped member having means at the ends thereof for attaching to a tension-applying means, said second bow-shaped member including left and right arms forming said bow-shaped member; and

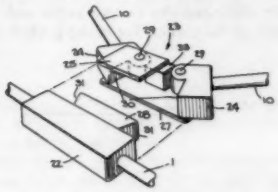
means for removably coupling said first and second bow-shaped members to each other so that when said second bow-shaped member is pulled away from said first bow-shaped member, said two bow-shaped members separate, said means for coupling further comprising:

a projection disposed on said first bow-shaped member so as to be substantially near the center of the mouth when the face bow is installed in the mouth of a user;

first and second plate means disposed in adjacent parallel relationship;

first pivot means connecting said first and second plate means; and

first means pivotally mounted on said pivot means and attached to one of said arms, said pivotally mounted means being spaced apart from the other of said arms so as to form an aperture therebetween for receiving said projection, said pivotally mounted means including a surface which engages with a surface of said projection so that when said arm attached to said pivotally mounted means is pivoted toward said first bow-shaped member and said projection is disposed in said aperture, said second bow-shaped member is locked to said first bow-shaped member and when at least one of said arms is pivoted away from said first bow-shaped member said two bow-shaped members may be separated.



4,453,918

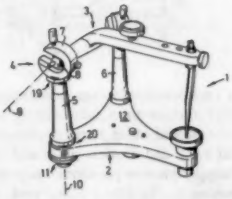
ARTICULATOR FOR USE IN MAKING DENTURES OF PARTS THEREOF

Svante R. Edwardson, Solna, Sweden, assignor to AB Dentatus, Hagersten, Sweden

Filed Sep. 23, 1982, Ser. No. 422,477

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—55 **9 Claims**



1. In an articulator, for use in making dentures or parts thereof, comprising a lower and an upper principal member which are interconnected by means of a condylar mechanism that allows relative movement between said principal members, the lower principal member being provided with two condylar track members incorporated in said condylar mechanism, each of said condylar track members having a condylar track for a condylar ball, each of said condylar track members being pivotable around a horizontal pitch axis for varying condylar track inclination and also being pivotable around a vertical yaw axis for varying the condylar track yaw angle, and locking means for locking the condylar track members in a desired attitude; the improvement in which said locking means comprises for each condylar track member a locking mechanism enabling simultaneous locking against movement

around both said pitch axis and said yaw axis, as well as enabling simultaneous unlocking for allowing movement around either or both of said axes.

4,453,919

DENTAL SCALER

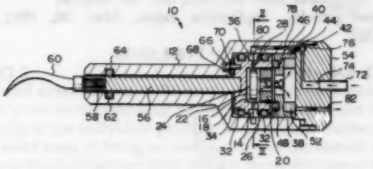
Saburou Takeshita, Tokyo, Japan, assignor to Micron Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 368,057

Claims priority, application Japan, Apr. 24, 1981, 56-62049; Oct. 1, 1981, 56-146526[U]; Oct. 22, 1981, 56-158192[U]

Int. Cl.³ A61C *1/07, 3/03*

U.S. Cl. 433—120 **17 Claims**



1. A vibrator comprising:

a substantially rigid vibrator body having a chamber therein defined by a cylindrical peripheral wall and a pair of parallel flat side walls perpendicular thereto, the distance between said side walls being smaller than the inner diameter of said cylindrical peripheral wall, so that said chamber has a disk-like shape, said body having at least an exhaust port opening from said chamber on at least one of said side walls;

a rotor received freely within said chamber, said chamber being substantially of greater height than said rotor, said rotor having a cylindrical peripheral surface and a pair of opposite side surfaces facing, respectively, said peripheral and side walls of the chamber, the diameter of said cylindrical surface being slightly smaller than the inner diameter of said cylindrical wall, so as to form a gap therebetween during operation of the vibrator, and;

means for ejecting a flow of gaseous working fluid under pressure on said cylindrical peripheral surface of the rotor in a direction substantially tangential to said surface, adequate to cause said rotor to rotate within said chamber with its cylindrical surface spaced by said gap from the cylindrical wall of the chamber, but with its edges in contact with or striking said flat side walls, thereby imparting a vibratory movement to said vibrator body.

4,453,920

INSTRUCTIONAL APPARATUS WITH MULTIPLE TYPES OF FEEDBACK

J. Richard Harte, 10 W. Concord, Kansas City, Mo. 64112

Filed Aug. 2, 1982, Ser. No. 385,298

Int. Cl.³ G09B *7/06*

U.S. Cl. 434—334 **8 Claims**

1. An instructional apparatus comprising:

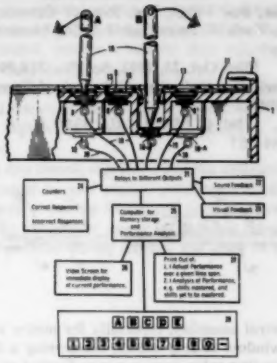
an instructional sheet having zones thereon indicating at least two types of answer choices, correct and incorrect,

a holding mechanism provided with an upper surface for receiving said sheet,

said mechanism having structure presenting said surface and defining relatively shallow and deep holes therethrough representing said types of answer choices, and further having means engageable with said sheet for holding the same on said surface in overlying relationship thereto with said zones in alignment with corresponding holes,

said structure having electrical contact means in the bottoms of said shallow and deep holes,

a stylus for selecting zones representing a student's answer choices, and provided with an electroconductive end portion engageable with the contact means in the hole corresponding to each zone selected upon insertion of said end portion thereinto, and



circuit means connected to said end portion and said contact means for communicating the types of responses of a student to electrical information handling apparatus for processing and feedback.

4,453,921

METHOD AND DEVICE FOR POSITIONING AND FIXING THE STATIC CONVERGENCE CORRECTION UNIT ON THE NECK OF A COLOR TELEVISION TUBE

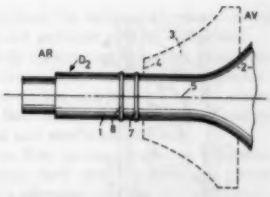
Adriano Venturi, Montrouge, France, assignor to Videocolor, Montrouge, France

Filed Sep. 9, 1982, Ser. No. 416,407

Claims priority, application France, Sep. 16, 1981, 81 17520

Int. Cl.³ H04N *5/645*

U.S. Cl. 445—23 **8 Claims**



1. A method for positioning and fixing the static convergence correction unit on the neck of a color television tube, wherein at least one and preferably two elastic collars having a small and uniform thickness of the order of one to two millimeters are mounted in extension around the neck at the rear end of the tube behind the deflection yoke and said static convergence correction unit is slidably fitted over said two elastic collars, said correction unit being designed in the form of a cylindrical ring whose internal diameter is chosen so as to permit engagement of said ring over said neck with a predetermined clearance and to cause compression of the elastic collars when the static convergence correction unit is brought to the desired position on said neck and over said collars, thus ensuring accurate positioning of said ring on said neck.

4,453,922
CONTROL ASSEMBLY AND PROCESS FOR PRODUCING SAME

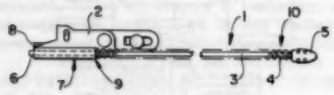
Kurt Glaser, Bad Vilbel, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 314,394

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015965

Int. Cl.³ B60J *7/02*; B32B *31/16*

U.S. Cl. 464—57 **5 Claims**



1. A control assembly, especially for motor vehicle sliding tops and window raising means, comprising a drive member and an operating cable having a core formed of a plurality of individual steel wires that are intertwined with spaces formed between the individual wires, a relatively thick wire being spirally wound about said plurality of intertwined wires for engagement with a drive pinion, wherein said spirally wound wire is secured to said plurality of intertwined wires in a manner leaving an end portion of said core free of the spirally wound wire, and wherein said drive member has a sleeve made of plastic, said end portion of the core being received within the plastic sleeve with the spirally wound wire terminating in the vicinity of an inlet end portion of said plastic sleeve, said end portion of the core being bonded thereto by an ultrasonic plastification of the sleeve that results in the plastic material of the sleeve surrounding the core and penetrating said spaces between the individual intertwined wires thereof wherein a connection that is resistant to at least torsional forces acting between the sleeve and the core is formed.

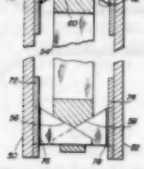
4,453,923
VARIABLE DIAMETER PULLEY ASSEMBLY

Edward H. Cole, Jr., Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 2, 1981, Ser. No. 230,981

Int. Cl.³ F16H *55/36*, *9/10*

U.S. Cl. 474—47 **2 Claims**



1. A variable diameter pulley assembly for use with a power transmission belt and adapted to be connected to a rotatable shaft, comprising:

a pair of hubs connected for rotation with said shaft, at least one hub being axially movable with respect to said shaft;

opposed sets of cooperating flange members, each set being associated with one of said hubs and having generally triangular abutting axially oriented outer surfaces to thus provide at all pulley diameters a substantially continuous and generally cylindrical outer surface adapted to be frictionally engaged by the power transmission belt;

means mounting said flange member of each set so that they are axially and radially movable with respect to each other, said mounting means comprising radially extending elongated guide means associated with said hubs;

means to move said one hub axially relative to said shaft;

slot means in each hub engaging the opposite flange member to guide and cause radial movement thereof when said hub is axially moved relative to said shaft;

whereby axial and radial movement of said flange members varies the outer diameter of said pulley assembly.

4,453,924
FRONT GEAR FOR BICYCLES

Yasushi Sugino, Ikoma, Japan, assignor to Sugino Cycle Industries, Ltd., Osaka, Japan

Filed Mar. 25, 1982, Ser. No. 361,763

Claims priority, application Japan, Mar. 30, 1981, 56-46136[U]

Int. Cl.³ F16H *55/30*

U.S. Cl. 474—160 **5 Claims**

1. A front gear for a bicycle comprising a gear main body made of plastics and a metal core embedded in the gear main body; the gear main body being in the form of an integral molding of plastics including a plurality of support arms arranged radially of the axis of the main body, an inner annular portion connecting together radially inward base ends of the support arms, an outer annular portion connecting together radially outward ends of the support arms and a sprocket wheel formed at the outer annular portion, the sprocket wheel and the outer annular portion being integrally joined together at an inner periphery of the outer annular portion and being arranged in succession axially thereof as spaced apart from one another so that the outer annular portion serves as a chain guard; the metal core including a boss having a serrated bore for a crankshaft to fit in and ribs integral with the boss and extending radially from the boss in corresponding relation to the support arms, each extended end of the ribs terminating at an intermediate portion of the support arms, at least one of the ribs being formed with a positioning hole, the ribs being embedded in the support arms of the gear main body, the boss being embedded in the inner annular portion of the gear main body at only an outer peripheral portion of the boss, while an inner peripheral portion of the boss being exposed to which an end of the metal crank shaft is to be crimped after insertion into the boss; at least one of the support arms being formed with an opening and register with the positioning hole.

4,453,925
TAMPON INSERTION DEVICE

William D. Decker, Darlington, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

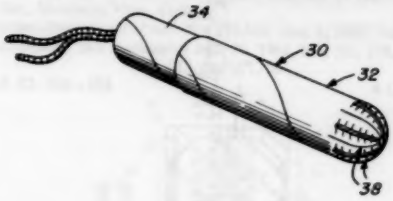
Filed Feb. 12, 1982, Ser. No. 348,341

Int. Cl.³ A61F *15/00*

U.S. Cl. 604—14 **21 Claims**

1. In a tampon insertion device, a cylindrical insertion tube

of paperlike material, said tube having a leading end comprising a plurality of generally triangular petals inwardly cupped into a leading domed configuration, each of said petals comprising inner and outer surfaces, opposed side edges, an apex and a base, the side edges of each petal being independent of the side edges of adjacent petals, and a plurality of nonirritating relief areas defined in the outer surface of each petal, said relief areas accommodating stresses developed in the inward cupping of the individual petals, said petal outer surfaces with said relief areas defining an outer surface of the domed configuration which is substantially without stress-developed surface disruptions.



4,453,926

SCARIFIER

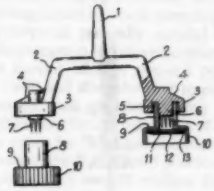
Michel G. H. Galy, St. Loup, France, assignor to Institut Merieux, Societe Anonyme, Lyons, France

Continuation of Ser. No. 228,165, Jan. 26, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 500,289

Claims priority, application France, Jan. 31, 1980, 80 02128

Int. Cl.³ A61B *17/20*

U.S. Cl. 604—47 **18 Claims**



1. In a scarifying device that includes at least one imperforate support having a plurality of parallel points projecting therefrom, and an elongated cylindrical sleeve removably mounted on said support for surrounding the points and adapted for hermetically holding a supply of active substance only between said support and sleeve; the improvement comprising, in combination:

envelope means including said elongated sleeve being initially open at both ends thereof, one open end of which is assembled onto, and constructed to cooperate with, said support, to provide a substantially hermetic seal with the portion of the support from whence the points project, while said other open end of said envelope means remains open to permit subsequent introduction thereinto of a supply of an active substance;

said elongated, open ended, sleeve projecting from its said end that is assembled onto the support in a direction and manner to surround the points and to provide that the other open end of said sleeve is located spaced beyond the tips of the points that project from the support;

a transverse annular wall provided at said other end of said cylindrical sleeve and extending radially outwardly of the sleeve, said annular wall providing a planar attachment surface thereon;

the length of said cylindrical sleeve being such that said planar attachment surface of the annular wall is located in a plane spaced distally from said support, and closely to but beyond a plane through the terminii of the points, whereby the cylindrical sleeve together with the support for the points cooperate to define a cup-shaped, open-ended, limited volume chamber into which an active substance may be introduced;

a selected amount of an active substance deposited into said elongated sleeve of the envelope means that is assembled onto the support, to immerse said points in said active substance;

and closure cap means, separate from the cylindrical sleeve, being secured to said planar attachment surface of the annular wall to overlie the central open space of the other end of said cylindrical sleeve to maintain the active substance in position during storage and prior to usage.

4,453,927

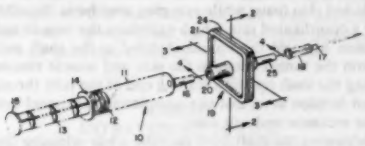
METHOD AND APPARATUS FOR MICROFILTRATION OF BLOOD

George E. Sinko, San Antonio, Tex., assignor to Gesco International, San Antonio, Tex.

Continuation-in-part of Ser. No. 10,064, Feb. 7, 1979, abandoned, and a continuation-in-part of Ser. No. 362,427, Mar. 23, 1982, abandoned. This application Nov. 12, 1980, Ser. No. 165,793

Int. Cl.³ A24B *1/30*

U.S. Cl. 604—52 **7 Claims**



1. A microfilter for infusing blood and blood components into infants and pediatric patients comprising:

a filter body constructed from two plastic sections;

the first section comprising a syringe adapter end;

the second section comprising a needle adapter end;

a woven filter screen retained between said syringe adapter end and said needle adapter end;

said woven filter screen comprising a stainless steel cloth;

said stainless steel cloth comprising a Dutch twill weave having a microaperture size of in the order of 18 microns effective to retain microaggregates 18 microns or larger in size and effective to pass particles, including viable components of blood such as erythrocytes, leukocytes, platelets, Factor VIII and Factor IX, in the order of 18 microns or smaller;

said syringe adapter end and said needle adapter end being connected to form a filter body having a body opening constructed internal of said filter body and a multiplicity of screen support ribs internal of said filter body so positioned as to contact and support said filter screen;

said filter screen being connected to and formed in the filter body in a composite integral structure by embedding the periphery of the filter screen in the two sections by sonic welding; and

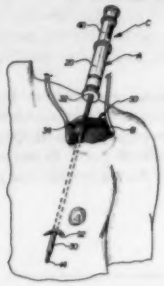
the volumetric capacity of the filter being less than 1 cc.

4,453,928

CATHETER TUNNELING APPARATUS

Ezra Steiger, Beachwood, Ohio, assignor to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed May 10, 1982, Ser. No. 376,529
Int. Cl.[3] A61M 5/00, 25/00
U.S. Cl. 604—53 1 Claims



1. A method of creating a subcutaneous tunnel between skin and muscle tissue of a patient, the method comprising:

inserting a shaft which has a longitudinal passage therethrough and which terminates at a shaft leading end in a tip which is sufficiently tapered to separate the muscle and skin tissue and sufficiently blunt to inhibit impaling and piercing of the skin and muscle tissues into an internal bore of a thin walled tube such that the shaft tip extends beyond the thin walled tube;

inserting the shaft tip under the patient's skin adjacent an entrance site;

pumping anesthesia through the shaft passage and out of the shaft tip into the muscle and skin tissue thereadjacent;

advancing the shaft and the tube between the patient's muscle and skin tissue while pumping anesthesia therethrough at a coordinated rate which maintains the muscle and skin tissue adjacent the tip anesthetized as the shaft and tube form the tunnel between the skin and muscle tissues;

exiting the shaft tip and a leading end of the tube through an exit incision at an exit site completing the tunnel between the entrance and exit sites;

withdrawing the shaft from the tube while retaining the tube between the skin and muscle tissues to define a mechanical tunnel between the entrance and exit sites;

passing a flexible catheter through the tube such that the catheter extends from both ends thereof;

partially withdrawing the tube and catheter together; and,

fully withdrawing the tube while substantially retaining the catheter against further withdrawal.

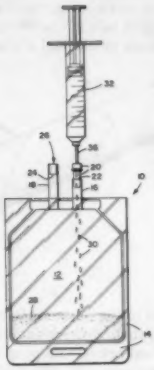
4,453,929

ACTIVATED CHARCOAL PACKAGE AND PROCESS

Louis J. Silverman, 1725 Novato Blvd., #15, Novato, Calif. 94947, and Amy Hewitt, 309 Walnut St., Petaluma, Calif. 94952

Filed Apr. 30, 1982, Ser. No. 373,337
Int. Cl.[3] A61J 7/00
U.S. Cl. 604—56 3 Claims

1. A method for treating humans to remove undesirable materials from the gastrointestinal tract that are adsorbable by activated charcoal, which comprises providing a sealed, flexible container containing a predetermined quantity of dry, finely divided activated charcoal, introducing to the sealed, flexible container with a hypodermic needle through an injection fitting for the hypodermic needle, which injection fitting is free of leakage after removal of the hypodermic needle, a sufficient quantity of pharmaceutically acceptable liquid to produce a flowable suspension of the activated charcoal in the liquid, flexing the flexible container to produce the flowable suspension, connecting one end of a tube to the interior of the



flexible container, and allowing the flowable suspension to flow through the tube and into the patient's stomach.

4,453,930

METHOD AND INSTRUMENT FOR PLACING IMPLANT IN TEAT DUCT AND UDDER

Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Cody, Wyo.

Division of Ser. No. 062,707, Aug. 1, 1979, Pat. No. 4,308,859.
This application Dec. 11, 1980, Ser. No. 215,367
Int. Cl.[3] A61M 31/00
U.S. Cl. 604—59 19 Claims

1. An instrument and implant adapted to be dispensed into the teat duct and udder of an animal having an udder and teat attached thereto to inhibit growth of mastitis causing bacteria in the udder and milk duct comprising: an elongated tubular member adapted to be inserted into the teat duct of the teat of an animal, said tubular member having a discharge opening and a chamber open to the discharge opening; implant means located in the chamber, said implant means comprising a non-electrically conductive body of a size to fit into the chamber of the tubular member, metal means covering separate segments of the body, said metal means including metallic silver disposed in spaced relation on said body and having no electrical conductive mechanical connection there between and means having material that reacts with the silver to produce bactericidal action in the udder and teat duct to inhibit the growth of mastitis causing bacteria; piston located in the chamber, said piston being movable in the chamber to push the implant means through the discharge opening; and means to move the piston in the chamber to move the implant means out of the

chamber through the discharge opening and into the teat duct and udder.

4,453,931

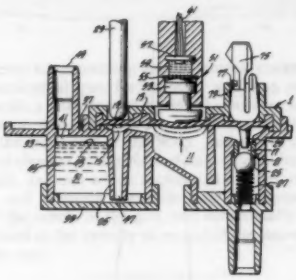
INTRAVENOUS METERING DEVICE

Giovanni Pastrone, Los Gatos, Calif., assignor to Oximetrix, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 174,666, Aug. 1, 1980, Pat. No. 4,336,800. This application Jun. 30, 1981, Ser. No. 278,954

Int. Cl.³ A61M 5/00

U.S. Cl. 604—153 **4 Claims**



1. A device for the precise metering of liquids for intravenous delivery to a patient, said device comprising a substantially rigid shell forming a pumping chamber, said chamber having an upper wall with first, second and third openings therein, a first resilient diaphragm covering said first opening and being adapted to be selectively engaged by an actuator member to move it from a relaxed position to a stressed position extending into the pumping chamber, means forming an inlet port for admitting liquid into said pumping chamber, said inlet port being positioned generally parallel to and closely spaced from said diaphragm in its relaxed position so that when said diaphragm is moved into its stressed position by said actuator member it will seal said inlet port to prevent the flow of liquid therethrough, said chamber having an outlet port spaced below the inlet port for the discharge of liquid from the chamber, an outlet valve for closing said outlet port including means for biasing said valve in its closed position with a predetermined biasing pressure, a second resilient diaphragm positioned to cover said second opening in said wall and adapted to be engaged by a piston to cause it to be extended into said chamber to create a pressure within the chamber capable of overcoming the biasing pressure to permit the discharge of liquid from the chamber, and a third diaphragm covering the third opening and having a projecting portion depending therefrom, said third opening being located above said outlet port whereby a projection member may be arranged to engage said third diaphragm within said third opening to cause the projecting portion thereof to engage the outlet valve to open said outlet port and permit the filling of the device and the tubing downstream thereof with liquid.

4,453,932

INTRAVENOUS METERING DEVICE

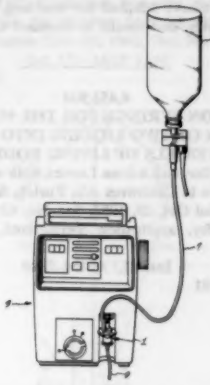
Giovanni Pastrone, Los Gatos, Calif., assignor to Oximetrix, Inc., Mountain View, Calif.

Continuation of Ser. No. 174,666, Aug. 1, 1980, Pat. No. 4,336,800. This application Feb. 19, 1982, Ser. No. 350,361

Int. Cl.³ A61M 5/00

U.S. Cl. 604—153 **7 Claims**

1. A metering device for intraveneous delivery of liquids to a patient comprising a rigid shell defining a pumping chamber and including laterally projecting shoulders for permitting the device to be inserted into and retained by a control unit in an upright position, a diaphragm forming at least a portion of the upper wall of the chamber, an actuator member engaged with said diaphragm and adapted to be reciprocated vertically by said control unit to pump liquid from said pumping chamber, said chamber having a downwardly tapering smoothly curved cross-sectional configuration so as to provide no sharp corners or recesses in the wall of the chamber and terminating in an outlet port at the bottom thereof, an outlet valve yieldably biased to normally close said outlet port, means for disabling said outlet valve by positively moving it and retaining it in a position spaced from said outlet port so as to permit free flow



of liquid therethrough, means defining an inlet port at the upper end of said chamber, a valve normally closing said inlet port, and means defining a tangential inlet from said inlet port into said chamber whereby when said device is initially charged with liquid by inverting it and opening the outlet valve with said outlet valve disabling means liquid is caused to flow through said inlet port and tangentially into said chamber wherein it swirls upwardly and through the open outlet port to sweep all air from said chamber.

4,453,933

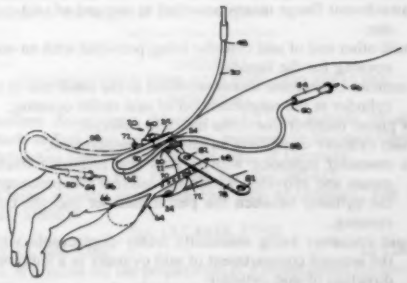
INTRAVENOUS DEVICE

Mark G. Speaker, 145 E. 16th St., Apt. 20C, New York, N.Y. 10003

Filed Nov. 24, 1981, Ser. No. 324,542

Int. Cl.³ A61M 5/00

U.S. Cl. 604—179 **19 Claims**



1. An intravenous feeding device, comprising:

a strap with fastening means, adapted for loose securement around a patient's limb, the encircling length of said strap adaptable to a position permitting longitudinal movement of said strap along the limb where the natural contours of the limb prevent removal of said strap therefrom;

a tube affixed to said strap at a location intermediate the ends of said tube, one end of said tube adapted for connection to a fluid reservoir, the other end of said tube adapted for connection to a catheter for insertion at an infusion site on the patient's limb, the segment of said tube between the intermediate location and the catheter end of said tube having sufficient slack such that the longitudinal movement of said strap away from the infusion site will be stopped by the natural contours of the patient's limb before all of the slack is used;

a protection sleeve adapted for inserting and covering the patient's limb, and means to connect said sleeve to said strap.

4,453,934

INJECTION SYRINGE FOR THE SUCCESSIVE INJECTION OF TWO LIQUIDS INTO THE BLOOD VESSELS OF LIVING BODIES

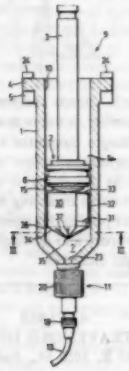
Hermann Gähwiler, and Adrian Lorenz, both of Zurich, Switzerland, assignors to Contraves AG, Zurich, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,307

Claims priority, application Switzerland, Nov. 11, 1981, 7253/81

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—191 **17 Claims**



1. A syringe for the successive injection of two liquids into the blood vessels of living bodies, comprising:

a cylinder having opposed ends;

attachment flange means provided at one end of said cylinder;

said other end of said cylinder being provided with an outlet opening for the liquids;

catheter connection means provided at the other end of said cylinder at the neighborhood of said outlet opening;

a piston member insertable into said cylinder;

said cylinder containing an internal compartment;

a container equipped with at least one reference fracture means and provided within the internal compartment of the cylinder between the piston member and the outlet opening;

said container being essentially freely displaceable within the internal compartment of said cylinder in a lenghtwise direction of said cylinder;

said container being filled with one of both liquids and the internal compartment of said cylinder containing the other liquid; and

said container, following ejection of the other liquid by said piston member, being opened at said reference fracture means and freeing for injection the liquid contained within said container.

4,453,935

DISPOSABLE CONTAINER-APPLICATOR WITH LEAK-PROOF COVER

W. Howard Newton, Cincinnati, Ohio, assignor to Chester Labs, Inc., Erlanger, Ky.

Continuation of Ser. No. 369,092, Apr. 16, 1982, abandoned. This application Dec. 6, 1983, Ser. No. 558,569

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—197 **15 Claims**

1. A disposable plastic container-applicator comprising:

(a) a collapsible container portion filled with a fluid;

(b) a flexible elongated tubular catheter having one or more perforations in the end of the catheter, the catheter attached to the container portion for the passage of fluid from the container portion to the catheter and out the perforations when pressure is applied to the container portion by a user;

(c) a hollow, completely removable, flexible cover member enclosing the catheter;

(d) a neck of the container portion having a groove circumscribing the neck;

(e) a ridge extending perpendicular with respect to the length of said catheter and perpendicularly outward from the inside surface of the cover member near the open end of the cover member and the ridge engaging the groove of the neck for sealing the cover member to the neck;

(f) a tip of the cover member having an inside surface diameter greater than the outside diameter of the catheter;

(g) a constricted portion of the cover member adjacent the tip at which the inside surface of the cover member frictionally engages the catheter; said constricted portion extending length-wise along the catheter a distance of approximately the diameter of the catheter adjacent the constructed portion;

(h) an intermediate portion of said cover member between said constricted portion and said ridge of said cover member in which the diameter of said intermediate portion is greater than the outside diameter of the catheter; and

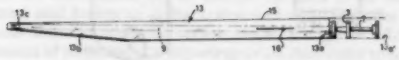
(i) the inside surface of the tip of said cover member and the outside diameter of the catheter forming a cavity between the catheter and the cover member, the cavity being sealed from the atmosphere by the constricted portion, the cavity allowing for the opening of the perforation in the catheter by forcing the air of the cavity through the perforation when pressure is applied to the tip by the user, the constricted portion preventing fluid from flowing out of the cavity prior to use of the container-applicator.

4,453,936

SLEEVE FOR PROTECTION AGAINST INTERNAL CONTAMINATIONS FOR A GYNAECOLOGICAL GUN IN PARTICULAR FOR BOVINES

Robert Cassou, L'Aigle, France, assignor to Maurice Cassou and Bertrand Cassou, both of L'Aigle, France

Filed Sep. 28, 1982, Ser. No. 425,286
Claims priority, application France, Apr. 29, 1982, 82 07420
Int. Cl.³ A61D 1/08
U.S. Cl. 604—263 23 Claims



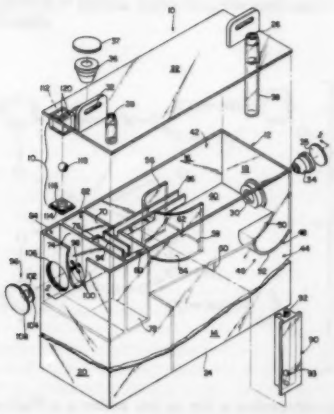
1. A sleeve for protecting against internal contamination for a gyneaecological gun for animals, said gun comprising a tubular body, a chamber for storing the product to be injected or aspirated and ejecting or aspirating means operative through the front end of the body, said sleeve comprising a cylindrical element of flexible and thin material having a longitudinal axis, and end which is closed in a sealed manner but is tearable, and a length approximately corresponding to the length of the whole of the gun, two substantially parallel slits being formed in the vicinity of an end of the sleeve opposed to the closed end.

4,453,937

DRAINAGE DEVICE WITH FLOW METER

Leonard D. Kurtz, Woodmere, and Joseph LiCause, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed Aug. 5, 1981, Ser. No. 290,667
Int. Cl.³ A61M 1/00
U.S. Cl. 604—319 13 Claims



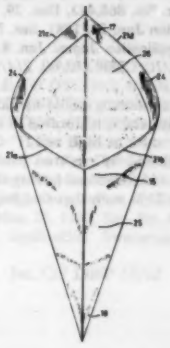
1. A drainage device comprising a closed container, an inlet to said container for connection with a thoracotomy tube, a partition extending across at least a portion of the upper end of said container, a recess formed in said partition beneath said inlet, a tubular inlet member extending downwardly from said inlet to said recess so that liquid in the recess forms a underwater seal with the lower end of the inlet member, an outlet from said closed container, an outlet chamber formed within said container enclosing said outlet, a oneway valve disposed in an inlet opening in a wall of said outlet chamber permitting fluid flow from said container inlet to said outlet and preventing fluid flow in the opposite direction, and a passageway connecting said inlet opening of said outlet chamber with the remaining volume of said container, said passageway including a series of contiguous vertically extending interconnecting conduits interconnectd such that fluid flowing from the container inlet to the outlet follows a tortuous path, including two bends of substantially 180 degrees within said series of vertically extending conduits.

4,453,938

URINE COLLECTING INCONTINENCE GUARD

Lennart I. Brendling, Järfälla, Sweden, assignor to Landstingens Inkopscentral, LIC, Ekonomisk Forening, Solna, Sweden

Continuation of Ser. No. 242,900, Mar. 12, 1981, abandoned.
This application Nov. 29, 1982, Ser. No. 445,144
Int. Cl.³ A61F 5/44
U.S. Cl. 604—346 1 Claim



1. A urine collecting incontinence guard for male use, comprising a urine holding sheath comprised by two identical side walls which are sealed together along the edges thereof except for an opening which is along one edge, the edges adjacent the edge along which the opening is formed being substantially parallel to each other and extending one at an acute angle and the other at an obtuse angle from said one edge, said side walls each comprising an outer layer of urine-impermeable material and an inner layer of urine-absorbing material, said edge opposite said opening being substantially parallel to said edge in which said opening is formed, said edge along which said opening is formed and its opposite edge being longer than the other two edges, said impermeable material being folded over the inner side of said absorbing material along said edge in which the opening is formed, thereby forming an edge means to minimize the loss of both urine and moisture absorbing material at the edges of the opening.

4,453,939

COMPOSITION FOR SEALING AND HEALING WOUNDS

Eberhard Zimmerman, Munster, and Ulrich Schiele, Munich, both of Fed. Rep. of Germany, assignors to Hormon-Chemie Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,817
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1981, 3105624
Int. Cl.³ A61K 37/02
U.S. Cl. 604—368 12 Claims

1. A process for the preparation of a composition for sealing and healing wounds which comprises adding a mixture of (1) a fibrinogen component containing fibrinogen, factor XIII-containing fibrinogen or a mixture thereof, and (2) a thrombin component containing thrombin, a substance which liberates thrombin in the presence of body fluid, or a mixture of such substances, to an organic solvent, in the absence of water, homogenizing the resulting slurry to form a homogeneous suspension of the mixture in the solvent, applying the said

suspenion to one or more surfaces of a collagen carrier and evaporating the organic solvent, whereby particles of the said mixture remain adhering to the surface or surfaces of the collagen.

4,453,940

AUTOCLAVABLE MEDICINAL-CONTAINING BAG FROM ETHYLENE-VINYL ACETATE COPOLYMER

Juuro Aoyagi, and Toshizi Ichikawa, both of Tokyo, Japan, assignors to Terumo Corporation, Tokyo, Japan

Continuation of Ser. No. 865,443, Dec. 29, 1977, abandoned. This application Jun. 23, 1981, Ser. No. 276,501

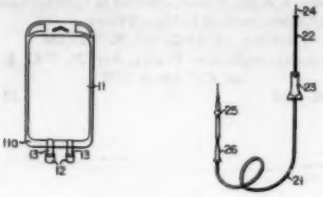
Claims priority, application Japan, Jan. 8, 1977, 52-1093

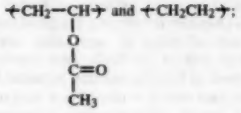
Int. Cl.[3] **C08J** *7/10*; **C08F** *210/00, 214/00*; **A61J** *1/00*

U.S. Cl. 604—408 **13 Claims**

1. A medical bag containing liquid medicine comprising:

a flexible bag body which is durable to autoclave sterilization at a temperature as high as 121° C. formed of a copolymer cross-linked by electron beam irradiation of a total dose of 5 to 15 Mrad and having the degree of cross-linking of 50 to 75% such that said bag body withstands high vapor pressure sterilization without deformation, said copolymer having units represented by the formulas:





and

a liquid medicine contained in said bag body.

4,453,941

COMPOSITION AND PROCESS FOR PRODUCING PIGMENTATION IN HAIR OR SKIN

Merle E. Jacobs, Goshen, Ind., assignor to Board of Overseers of Goshen College, Goshen, Ind.

Division of Ser. No. 220,449, Dec. 29, 1980, Pat. No. 4,390,341.
This application Nov. 8, 1982, Ser. No. 439,802
Int. Cl.³ A61K 7/13, 7/42, 7/44, 7/021
U.S. Cl. 8—424 14 Claims

1. A composition for coloring hair or skin comprising: (a) an effective amount of a tyrosyl derivative having a side chain free for indolization, (b) an effective amount of an omega-amino acid having an aliphatic structure which includes from about three to about six carbon atoms, and (c) an effective amount of an oxidant for imparting a rich, dark color to hair or skin.

9. A composition for coloring hair or skin comprising: (a) an effective amount of a first tyrosyl derivative having a side chain not free for indolization, (b) an effective amount of a second tyrosyl derivative having a side chain free for indolization, (c) an effective amount of an omega-amino acid having an aliphatic structure which includes from about three to about six carbon atoms, and (d) an effective amount of an oxidant for imparting proportionally darker color to hair or skin relative to a natural color.

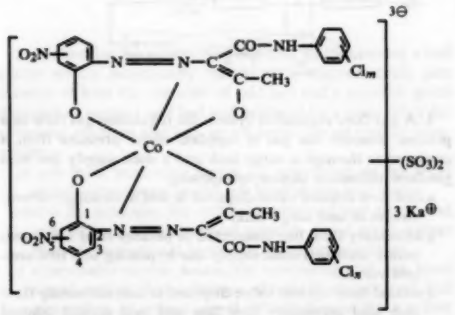
4,453,942

USE OF 1:2 COBALT COMPLEX DYES FOR DYEING LEATHER OR FURS

Alois Püntener, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,571
Claims priority, application Switzerland, Dec. 21, 1981, 8158/81
Int. Cl.³ C09B 56/02; D06P 3/32
U.S. Cl. 8—437 9 Claims

1. A process of dyeing, comprising the application of a dye of the formula



wherein $Ka^{\oplus}$ is a cation and m and n independently of one another are each 1 or 2, to leather or furs.

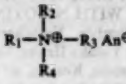
4,453,943

SOLID FORMULATIONS OF ANIONIC DYES

Paolo Balliello, Rheinfelden, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1983, Ser. No. 478,005
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212408
Int. Cl.³ D06P 67/02
U.S. Cl. 8—524 13 Claims

1. A solid dye formulation comprising at least one anionic dye, at least one anionic dispersant, a non-ionic emulsifier and optionally further ingredients, which formulation contains 0.1 to 10% by weight, based on the final formulation, of a quaternary ammonium salt of the formula I



(I)

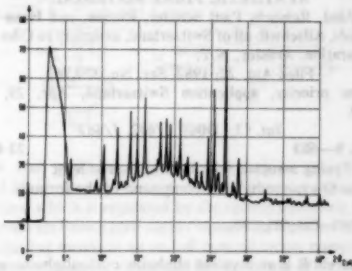
wherein R_1 is a C_8–C_{20}alkyl or C_8–C_{20}alkenyl group, each of R_2, R_3 and R_4 independently of one another is a C_1–C_4-alkyl group, and $An^{\ominus}$ is an anion.

4,453,944

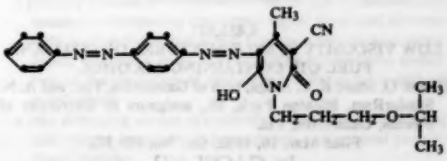
DYE STABLE TO DYEING, PROCESSES FOR PRODUCING IT, AND ITS USE FOR DYEING AND PRINTING SYNTHETIC AND SEMI-SYNTHETIC FIBRE MATERIALS

Peter Liechti, Arisdorf; Antoine Clément, Basel; Peter Eugster, Arlesheim, and Kurt Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,291
Claims priority, application Switzerland, Apr. 7, 1982, 2141/82
Int. Cl.³ D06P 67/02
U.S. Cl. 8—526 2 Claims



1. A crystalline modification of the dye of the formula



which modification is stable to dyeing and which is characterized by the X-ray diffraction pattern shown in FIG. 1 (CuK-α_1 radiation) with the characteristic reflexes, and the d values of the interplanar spacings calculated from the diffraction pattern:

d(Å)	15.1	8.5	7.2	6.3	5.93	5.56	4.91	4.71
I*	m	m	s	s	m	s	m	m
d(Å)	4.58	4.29	3.87	3.62	3.51	3.31	3.10	
I*	m	m	m	m	s	ss	m	

I* = intensity.

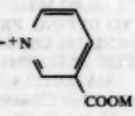
4,453,945

PROCESS FOR DYEING CELLULOSE FIBERS OF ITS UNION FIBERS WITH REACTIVE TRIAZINYL DYE QUATERNIZED WITH NICOTINIC ACID

Masakatsu Miyamoto, Ohmiya; Yoshiharu Suzuki, Tokyo; Masayoshi Ojima, Yono; Yutaka Iizuka, Urawa; Ryuzo Orita, Saitama, and Tadashi Matsuo, Konosu, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Japan

Filed Apr. 19, 1983, Ser. No. 486,520
Claims priority, application Japan, Apr. 27, 1982, 57-69584
Int. Cl.³ C09B *62/00*
U.S. Cl. 8—543 8 Claims

1. A process for dyeing cellulose fibers or its union fibers which is effected according to an exhaustion dyeing method using a reactive dye containing at least one s-triazinyl group having a group of the formula:



where M represents a hydrogen or an alkali metal, in an aqueous dye bath having a pH in the range of 4 to 10 and a dyeing temperature in the range of 110° C. to below 140° C.

4,453,946

DYEING ASSISTANT AND USE THEREOF IN DYEING SYNTHETIC FIBRE MATERIAL

Heinz Abel, Reinach; Paul Schäfer, Rieben, and Hans-Ulrich Berendt, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 22, 1982, Ser. No. 370,762
Claims priority, application Switzerland, Apr. 29, 1981, 2782/81
Int. Cl.³ D06P *1/642, 1/667*
U.S. Cl. 8—603 23 Claims

1. A dyeing assistant which comprises at least
(A) an O-cyanoethylated compound of the formula

$$R(O—CH_2CH_2CN)_n \quad (1)$$

wherein R is an n-valent aliphatic, cycloaliphatic or araliphatic radical, and n is 1 to 5,
(B) an anionic surfactant, and
(C) an non-ionic surfactant.

4,453,947

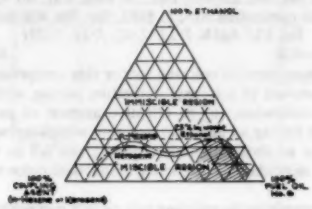
LOW VISCOSITY STABLE MIXTURES OF COAL AND FUEL OIL CONTAINING ALCOHOL

Dinesh O. Shah; K. C. Adiga, both of Gainesville, Fla., and A. N. SunderRam, Richton Park, Ill., assignors to University of Florida, Gainesville, Fla.

Filed Mar. 18, 1982, Ser. No. 359,372
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 15 Claims

1. A stable, homogeneous liquid fuel having a viscosity at room temperature of less than 0.6 poise comprising petroleum residual oil having a viscosity of 1.0 to 2.5 poises at room temperature, an alcohol of 1–2 carbon atoms, and as a coupling agent selected from the group consisting of kerosene and an aliphatic hydrocarbon of 6–16 carbon atoms.

13. A stable dispersion of powdered coal in a liquid fuel wherein said dispersion has a viscosity at room temperature of less than about 8.0 poises, said dispersion comprising:
20–40% by weight of powdered coal having a particle size of not greater than 200 mesh;
80–60% by weight of a liquid fuel; and
0.1–0.5% by weight of a surfactant;
said liquid fuel comprising:
65–80% by weight of Fuel Oil No. 6
15–25% by weight of ethanol or methanol



5–15% by weight of kerosene or a mixture of kerosene and n-hexane

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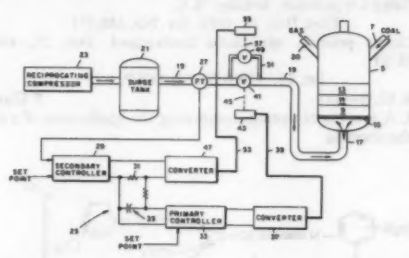
4,453,948

AIR-FLOW REGULATION SYSTEM FOR A COAL GASIFIER

George E. Fasching, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,641
Int. Cl.³ C10J *3/22*
U.S. Cl. 48—76 4 Claims



1. A gas flow regulation system for regulating gas flow in a process wherein the gas is supplied under pressure from a compressor through a surge tank and a main supply line to a gas-flow utilization device, comprising:
a first flow control valve disposed in said main supply downstream of said surge tank,
a secondary flow line connected in parallel fluid communication with said main supply line bypassing said first control valve,
a second flow control valve disposed in said secondary flow line, said secondary flow line and said second control valve being substantially smaller than said main line and said first flow control valve,
means for sensing the flow in said main supply line upstream of the bypassing line and providing an output signal proportional to the flow rate of said gas through said supply line,
a primary controller means operatively connected for comparing an input signal proportional to the flow rate of said gas in said main supply line provided at an input thereof with a first set point value signal and adjusting the position of said first valve to maintain said preselected flow rate,
a secondary control means connected to said means for sensing the flow for comparing the output signal from said flow sensing means with a second set point value signal corresponding to the desired flow rate and adjusting the position of said second valve to maintain said preselected flow rate and generating an output error signal propor-

tional to the deviation of said sensing means output signal from said first set point signal; and

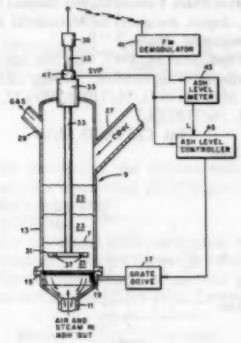
a low-pass filter means having a preselected time constant coupling said error signal from said second controller to the input of said first controller so that said first controller only responds to flow-rate deviations from said first set point value which exist for a period greater than the time constant of said filter circuit means, and wherein said first set point value signal corresponds to about 40% to 60% of the full-scale output of said secondary controller.

4,453,949

ASH BED LEVEL CONTROL SYSTEM FOR A FIXED-BED COAL GASIFIER

George E. Fasching, Morgantown, and John R. Rotunda, Fairmont, both of W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,308
Int. Cl.³ C10J *3/42*
U.S. Cl. 48—77 7 Claims



1. In combination with a fixed-bed coal gasifier having a bed stirrer which reciprocally travels at a selected cycle rate through at least the ash zone of said bed and a movable grate disposed to support said bed and operated by a grate drive for removing ash from said bed, an ash level control system, comprising:

an ash level measuring means for generating an ash level signal proportional to the ash level above said grate;

means for detecting the vertical position of said stirrer and generating a stirrer vertical position signal at an output thereof proportional to the stirrer vertical position;

a comparator circuit means for comparing said ash level signal with a first reference threshold signal level and generating an output signal which changes from a first state to a second state when said reference threshold is exceeded;

a trigger signal generating means responsive to said stirrer vertical position signal for generating a trigger pulse during each stirrer cycle at a preselected stirrer position;

an up/down counter means for registering a decrement in the stored count in response to said trigger pulses occuring when said output of said comparator means is in said first state and registering an increment in the stored count in response to said trigger pulses occuring when said output of said comparator means is in said second state;

a presettable down counter means coupled to said up/down counter for registering a preset count corresponding to said stored count of said up/down counter means when a preset pulse is applied to a preset input thereof and subsequently counting the registered count down in response to clock pulses applied to a count input thereof;

a clock pulse generator for generating clock pulses at a selected frequency;

a control means operable in response to each of said trigger pulses for generating and applying said preset pulse to said down counter and subsequently applying said clock pulses from said clock pulse generator to said count input of said down counter so that said counter is counted down to zero count during each stirrer cycle; and

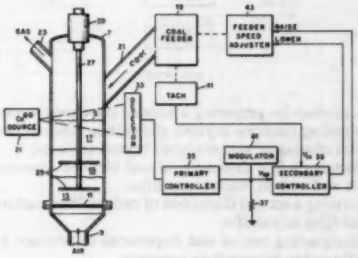
means for activating said grate drive to operate said grate once each stirrer cycle for the period required to count said preset count of said down counter to zero.

4,453,950

COAL GASIFICATION SYSTEM WITH A MODULATED ON/OFF CONTROL SYSTEM

George E. Fasching, Morgantown, W. Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 20, 1982, Ser. No. 420,051
Int. Cl.³ C10J *3/30*
U.S. Cl. 48—86 R 5 Claims



1. A coal gasification system including an on/off mode control device for regulating a variable operating parameter of the system which is regulated by the system operating energy feed input rate from a feed supply means that is varied by a feed rate adjusting means in an on/off control mode, comprising:

detector means for detecting the deviation of said system operating parameter about a preselected operating level and generating an output signal proportional to said deviation,

a primary controller connected to the output of said detector means for comparing the output signal from said detector with a set point valve signal coresponding to said preselected operating level to produce an error signal indicative of the deviation of said detector signal from said set point signal;

a rate detecting means operatively connected for detecting said energy input rate and generating a rate signal proportional thereto;

a secondary controller means operatively connected for comparing said rate signal with said error signal within at least one preselected deadband and switching said adjusting means on and off to change the feed rate of said feed supply means sufficient to bring said rate signal within said deadband when said deadband is exceeded; and

a modulating means operatively connected for modulating said error signal at a selected amplitude and frequency to substantially reduce cycling of said control system and wherein said variable operating parameter is the coal bed level in a coal gasifier, said feed supply is a variable feed rate coal feeder having a feed rate adjusting means and wherein said detecting means for detecting the operating parameter deviation is a nuclear level gauge.

4,453,951

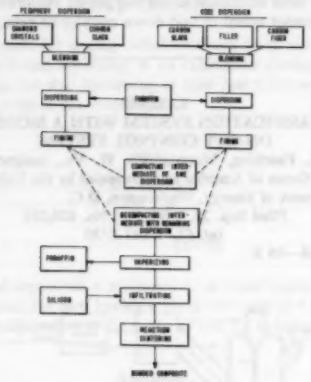
PROCESS FOR THE PRODUCTION OF SILICONE CARBIDE COMPOSITE

John M. Ohno, Plymouth, Mich., assignor to General Electric Co., Waterford, N.Y.

Continuation-in-part of Ser. No. 167,019, Jul. 9, 1980, abandoned. This application Jan. 22, 1981, Ser. No. 227,228

Int. Cl.³ C04B *31/16*

U.S. Cl. 51—307 **8 Claims**



1. A process for preparing a bonded composite comprising:
(a) blending diamond crystals and carbon black to permit an even coating of said diamond crystal surfaces;
(b) forming a first dispersion of said blended diamond crystals and carbon black in paraffin;
(c) forming a second dispersion of carbon fiber, carbon black and filler in paraffin;
(d) compacting one of said dispersions to produce a physically stable intermediate compact;
(e) recompacting said intermediate compact with the remaining dispersion to produce a binary compact;
(f) subjecting said binary compact to a vacuum for a period of time at a temperature sufficient to vaporize essentially all of said paraffin;
(g) infiltrating said binary compact with liquid silicon; and
(h) sintering the binary compact containing infiltrated silicon under conditions sufficient to produce a β-silicon carbide binder uniting said composite, elemental silicon forming approximately 3–6% by weight of said first dispersion after sintering.

4,453,952

OXYGEN ABSORBENT AND PROCESS FOR THE SEPARATION OF OXYGEN AND NITROGEN USING THE SAME

Jun Izumi; Hiroyuki Tsutaya; Tatsuo Amitani; Masayoshi Kubo, and Kenichi Maehara, all of Nagasaki, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 402,976, Jul. 29, 1982, abandoned, which is a continuation of Ser. No. 264,973, May 18, 1981, abandoned. This application Jul. 22, 1983, Ser. No. 516,541

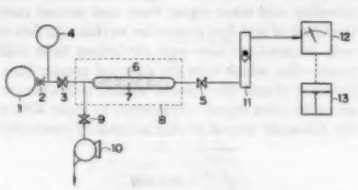
Claims priority, application Japan, May 23, 1980, 55-67772; Jun. 2, 1980, 55-72701

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—68 **20 Claims**

1. An adsorbent useful for separating oxygen from mixed gases containing it which comprises a Na-A type zeolite containing, based on the total weight of adsorbent, from 0.1 wt % to 1 wt % calculated as Fe_2O_3, of iron with a valence of at least 2.

7. A process for separating oxygen from a mixture of gases containing it which comprises contacting the mixture with an adsorbent which is a Na-A type zeolite containing, based on the total weight of adsorbent, from 0.1 wt % to 1 wt % calculated as Fe_2O_3, of iron with a valence of at least 2 at a temperature of from −50° C. to 30° C. to adsorb oxygen selectively from the adsorbent.



4,453,953

INTERMITTENT OZONE FEEDING APPARATUS

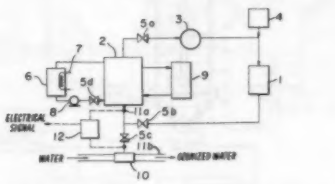
Masaaki Tanaka; Shiro Yamauchi, and Shigeki Nakayama, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Amagasaki, Japan

Filed Nov. 24, 1981, Ser. No. 324,423

Claims priority, application Japan, May 12, 1981, 56/71057[U]; May 12, 1981, 56/71058; May 12, 1981, 56/71059; May 18, 1981, 56/71803[U]

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—163 **5 Claims**



1. An intermittent ozone feeding apparatus comprising:
oxygen feeding means;
an ozonizer for producing ozonized oxygen from said oxygen feeding means;
an adsorption-desorption tower for adsorbing ozone from said ozonized oxygen and desorbing said ozone;
means for recycling oxygen produced by adsorbing ozone in said adsorption-desorption tower to said ozonizer;
suction means for applying suction under a reduced pressure to desorb ozone from said adsorption-desorption tower;
passage means for desorbed ozone interconnecting said adsorption-desorption tower and said suction means;
means for cooling said adsorption-desorption tower during an ozone adsorption period;
means for heating said adsorption-desorption tower during an ozone desorption period at a temperature higher than that occurring during the adsorption period;
flow passage means having a first end connected to said passage means and a second opened end;
first and second electromagnetic valves positioned in said passage means;
valve means mounted in said flow passage means intermediate said first and second electromagnetic valves for preventing the flow of fluid in the direction of said first and second electromagnetic valves during the ozone desorption period and for permitting flow of fluid in an opposite direction during the ozone adsorption in said adsorption-desorption tower; and
pressure detecting means positioned in and operatively associated with said passage means for discontinuing operation

of said suction means when the pressure of said adsorption-desorption tower becomes higher than that within said suction means upon completion of said desorption and for preventing reverse flow of fluid during the ozone adsorption into said adsorption-desorption tower.

4,453,954

ASSEMBLY FOR CONNECTING THE COLUMN ENDS OF TWO CAPILLARY COLUMNS

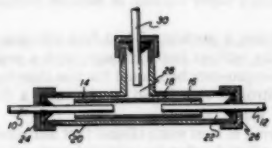
Bruno Kolb, Owingen; Peter Pospisil, Uberlingen, and Maria Auer, Stockach, all of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Continuation of Ser. No. 366,636, Apr. 8, 1982, abandoned. This application Apr. 22, 1983, Ser. No. 487,635

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117173

Int. Cl.³ B01D *15/08*

U.S. Cl. 55—386 **6 Claims**



1. Assembly for connecting the column ends of capillary columns by means of a connecting piece in gas chromatography; said assembly comprising:

a connecting piece; and

a capillary tube positioned with said piece, said capillary tube being adapted to accept therein the ends of capillary columns whereby there is created annular gaps between said columns and said capillary tube.

4,453,955

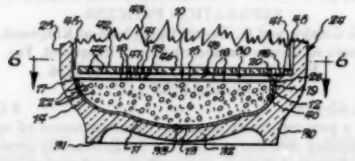
DESICCANT CARTRIDGE FOR LABORATORY DESICCATOR

John S. Cullen, Buffalo; Samuel A. Incorvia, and James A. Vogt, both of Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed Nov. 16, 1982, Ser. No. 442,029

Int. Cl.³ B01D *53/04, 53/26*

U.S. Cl. 55—387 **17 Claims**



1. A desiccant cartridge comprising a bottom wall having upwardly extending outer side portions, a substantially planar circular top wall, openings in said top wall for permitting passage of a gas, a plurality of circumferentially spaced recessed portions in said outer side portions, desiccant confined between said walls, a first edge portion of said outer side portions, a second edge portion on said top wall, a seam joining said first and second edge portions, and second circumferentially spaced recessed portions in said planar top wall in alignment with said recessed portions in said outer side portions.

7. In a laboratory desiccator having a bowl with a side wall, a bottom wall, a shelf having an upper side and an underside, a plurality of circumferentially spaced projections located proximate said bottom wall for supporting said underside of said shelf thereon, and a space between said shelf and said bottom wall for receiving desiccant material, the improvement comprising a desiccant cartridge comprising a cartridge bottom wall positioned in said space in contiguous relationship to said bottom wall of said bowl, outer upwardly extending side portions on said cartridge bottom wall, a substantially planar circular top wall spaced from said underside of said shelf, a plurality of circumferentially spaced recessed portions in said outer side portions for receiving said projections in mating relationship, desiccant confined between said top wall and said cartridge bottom wall, and openings in said top wall for effecting communication between said desiccant and said space between said underside of said shelf and said top wall.

4,453,956

RECOVERING CONDENSABLES FROM NATURAL GAS

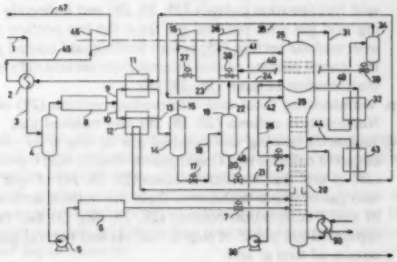
Cesare Fabbri; Gianfranco Bellitto, both of Milan; Giuseppe La Mantia, Cassano d'Adda, and Biagio Failla, Milan, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 21, 1982, Ser. No. 390,686

Claims priority, application Italy, Jul. 7, 1981, 22779 A/81

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—18 **3 Claims**



1. A process of recovering condensable hydrocarbons from natural gas comprising:

a. indirectly cooling a natural gas feed stream down to a temperature slightly above the temperature at which hydrates are formed:

b. separating condensates from the gas phase of said cooled feed stream of step a;

c. dehydrating and feeding said condensates from step b to the bottom section (**28**) of a fractionation column (**25, 29, 28**), said fractionation column consisting of three discrete sections, a top section (**25**) working under the outlet pressure of a first stage (**16**) of an expansion turbine, an intermediate section (**29**) working under the outlet pressure of a second stage (**36**) of said expansion turbine, and a bottom section (**28**) working under a pressure slightly above the pressure of said intermediate section (**29**) so that vapors emerging from said bottom section (**28**), after a partial condensation, can be sent to the bottom of the intermediate section (**29**);

d. dehydrating and indirectly cooling said separated gas phase of step b while recovering negative calories from both a residual gas drawn from the intermediate section (**29**) of said fractionation column (**25, 29, 28**) and also from a liquid stream drawn from the bottom section (**28**) of said fractionation column (**25, 29, 28**);

e. separating condensates from the gas phase of the cooled gas phase of step d;

f. feeding said separated gas phase of step e to the first stage of an expansion turbine (**16**) with expansion to an intermediate pressure corresponding to that of the head of the top section (**25**) of said fractionation column (**25, 29, 28**);

g. expanding said condensates of step e through a valve (**17**)

down to a pressure slightly above the outlet pressure of said first stage of said expansion turbine (16);

h. separating from said condensates stream of step g a liquid stream enriched with the heavier hydrocarbons of the starting liquid and a gas stream rich with lighter hydrocarbons and feeding said liquid stream into the bottom (28) of said fractionation column (25, 29, 28);

i. mixing said gas stream of step h with the gas stream of step f and feeding said mixture of gases to the bottom of the top section (25) of the fractionation column (25, 29, 28);

j. withdrawing liquid stream from the intermediate section (29) and pumping said liquid stream into the top section (25) of said fractionation column (25, 29, 28);

k. indirectly cooling gas exiting said top section (25) of said fractionation column (25, 29, 28) with cold residual gas drawn from said intermediate section (29) of said fractionation column (25, 29, 28);

l. separating from said cooled gas of step k liquid condensates and a gas stream;

m. feeding said gas stream of step l to said second stage (36) of said expansion turbine;

n. mixing the expanded gas stream of step m and the liquid condensates of step l and feeding the mixture into an upper section of said intermediate section (29) of said fractionation column (25, 29, 28);

o. withdrawing gas produced in the bottom section (28) of said fractionation column (25, 29, 28) and indirectly cooling said gas with residual gas from the top portion of the intermediate section (25) before feeding said cooled gas to the lowest portion of said intermediate section (29) of said fractionation column (25, 29, 28);

p. withdrawing from said intermediate section (29) of said fractionation column (25, 29, 28) said residual gas;

q. indirectly heating said residual gas of step p by yielding negative calories to: (1) said gas existing in said top section (25) of said fractionation column (25, 29, 28) of step k; (2) said gas of step o withdrawn from the bottom section (28) of said fractionation column (25, 29, 28); (3) said cooled separated gas phase of step d; and (4) said natural gas feed stream of step a; and

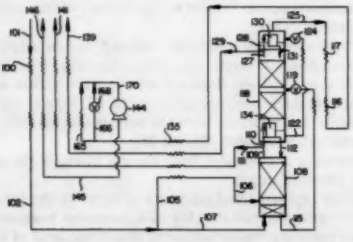
r. fractionating in the bottom section (28) of said fractionation column (25, 29, 28) liquids coming from the top section (25), the liquid stream of step h, and the condensates of step c, the heat required for the fractionation being supplied by a bottom reboiler (50) and by one or more lateral reboilers (12).

4,453,957

DOUBLE COLUMN MULTIPLE CONDENSER-REBOILER HIGH PRESSURE NITROGEN PROCESS

Ravindra F. Pahade, North Tonawanda; John H. Ziemer, Grand Island, and Harry Cheung, Buffalo, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 2, 1982, Ser. No. 446,363
Int. Cl.³ F25J 3/04
U.S. Cl. 62—25 **18 Claims**



1. A process for the production of relatively large quantities of nitrogen gas at greater than atmospheric pressure by the separation of air by rectification comprising:

(A) introducing cleaned, cooled feed air at greater than atmospheric pressure into a high pressure column operating at a pressure of from about 80 to 300 psia;

(B) separating said feed air by rectification in said high pressure column into a first nitrogen-rich vapor fraction and a first oxygen-enriched liquid fraction;

(C) recovering from about 20 to 60 percent of said first nitrogen-rich vapor fraction as high pressure nitrogen gas at a pressure in the range of from 80 to 300 psia;

(D) introducing said first oxygen-enriched liquid fraction into a medium pressure column which is in heat exchange relation with said high pressure column and is operating at a pressure lower than that of said high pressure column of from about 40 to 150 psia and in which feed introduced into said medium pressure column is separated by rectification into a second nitrogen-rich vapor fraction and a second oxygen-enriched liquid fraction;

(E) recovering from about 0 to 60 percent of said second nitrogen-rich vapor fraction as medium pressure nitrogen gas;

(F) condensing a portion of said first nitrogen-rich vapor fraction by indirect heat exchange with a portion of said second oxygen-enriched liquid fraction thereby producing a first nitrogen rich liquid portion and a first oxygen-enriched vapor portion;

(G) employing at least some of said first nitrogen-rich liquid portion as liquid reflux for said high pressure column and said first oxygen-enriched vapor portion as vapor reflux for said medium pressure column;

(H) condensing at least a portion of said second nitrogen-rich vapor fraction by indirect heat exchange with a portion of said second oxygen-enriched liquid fraction thereby producing a second nitrogen-rich liquid portion and second oxygen-enriched vapor portion;

(I) employing said second nitrogen-rich liquid portion as liquid reflux for said medium pressure column;

(J) employing said first nitrogen-rich liquid portion as additional liquid reflux for said medium pressure column in an amount equivalent to that of from about 0 to 40 percent of said first nitrogen-rich vapor fraction such that the sum of said amount and of the high pressure nitrogen gas recovered in step (C) is from about 20 to 60 percent of said first nitrogen-rich vapor fraction; and

(K) removing from the process said second oxygen-enriched vapor portion.

4,453,958

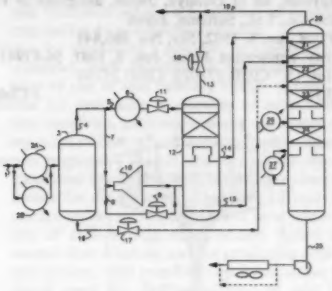
GREATER DESIGN CAPACITY-HYDROCARBON GAS SEPARATION PROCESS

Jerry G. Gulsby, and G. Dennis Cook, both of Kingwood, Tex., assignors to Gulsby Engineering, Inc., Kingwood, Tex.

Filed Nov. 24, 1982, Ser. No. 444,436
Int. Cl.³ F25J 3/02
U.S. Cl. 62—28 **5 Claims**

1. In a process for the recovery of components of volatile gas containing methane and heavier components by processing said gas through a demethanizer colkmn, said process comprising introducing a stream of feed gas under pressure into a heat exchange unit to lower the temperature of said gas stream, dividing the stream into two main streams, the first of said two main streams being primarily vapors, which are again divided into two portions with one portion cooled by passing same through a heat exchanger, and then through a controlled expansion valve and into the top of a two stage separator, directing the other portion through an expansion means, lowering the pressure and temperature thereof and then through a divider, the lower section of the two-stage separator, and said divider separating the vapors and liquid, discharging the vapors into the upper section for combination with its stripped vapors and thence into a discharge conduit, discharging the liquid in two separate liquid streams from the two stage separa-

tor directly into the demethanizer, one liquid stream being fed into the demethanizer column onto the top packed section, and the other stream entering the demethanizer column on top of



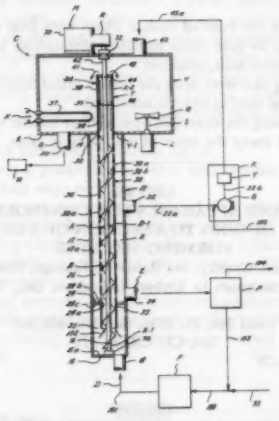
the second packed section therein, and liquid from the second main stream expanded and fed into the demethanizer at a midway feed point.

4,453,959

CRYSTAL WASHING AND PURIFICATION METHOD

D. Bruce Bishkin, 324 S. 42nd St., #1, Philadelphia, Pa. 19104

Filed Feb. 25, 1982, Ser. No. 352,193
Int. Cl.³ B01D 9/02
U.S. Cl. 62—542 **7 Claims**



1. A process for separating and purifying a crystallized component from a two-phase slurry of the crystallized component and liquified multi-component mixture, comprising the steps of:

directing the two-phase slurry of the crystallized component and liquified multi-component mixture into a purification column;

separating in the purification column the crystallized component out of the two-phase slurry, the crystallized component retaining the liquified multi-component mixture about the crystalline structure thereof;

injecting a heated, inert gas into the purification column in a direction countercurrent to the direction of said separating of the crystallized component whereby a portion of the crystallized component is melted to wash away multi-component mixture retained about the crystalline structure of the crystallized component to result in a purified residue of crystallized component;

passing the inert gas countercurrently through the crystallized component; and,

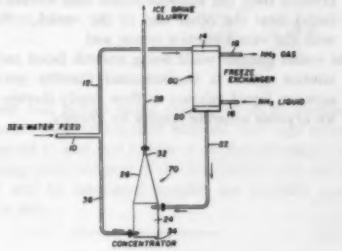
mixing the inert gas with the crystallized component to form a porous, high purity residue of crystallized component.

4,453,960

LIQUID-SOLID SEPARATION APPARATUS AND METHOD

John S. Andrepont, Lisle, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sep. 20, 1982, Ser. No. 419,954
Int. Cl.³ B01D 9/04, 45/12
U.S. Cl. 62—542 **14 Claims**



6. A freeze concentration apparatus comprising elements designed, sized and arranged for continuously concentrating an aqueous liquid mixture feed stream comprising:

a feed stream conduit communicating with a freeze exchanger for delivering an aqueous liquid mixture to the freeze exchanger for cooling therein to form ice crystals in the liquid mixture;

a conduit extending from an outlet of the freeze exchanger to an enclosed concentrator vessel inlet for delivering ice crystal-containing aqueous liquid mixture from the freeze exchanger to the concentrator vessel;

means designed, sized and arranged for inhibiting ice deposition, including an enclosed concentrator vessel being defined by a shell having a vertical axis and which is circular in horizontal section for most of its height, and with the vessel having upper and lower ends; the shell including a conical portion with the apex at the upper end of the vessel; the ice crystal-containing aqueous liquid mixture feed stream inlet communicating with the vessel interior space between the vessel upper and lower ends; a first outlet near the apex of the conical portion communicating with the vessel interior space for removing an aqueous liquid mixture more concentrated in ice crystals than the inlet stream; and a second outlet near the other end of the vessel communicating with the vessel interior space for removing an aqueous liquid mixture less concentrated in ice crystals than the inlet stream;

a conduit extending from the concentrator vessel first outlet for removing the more concentrated ice crystal-containing liquid mixture;

a conduit extending from the concentrator vessel second outlet to a freeze exchanger inlet for conveying the less concentrated ice crystal-containing aqueous liquid mixture from the concentrator vessel to the freeze exchanger; and

the concentrator vessel interior walls being smooth faced and the vessel interior space is unobstructed thereby permitting the aqueous liquid mixture to flow freely therein so that the ice crystals separate largely by gravity.

12. A method of increasing the concentration of ice crystals dispersed in an aqueous liquid mixture feed stream containing the same comprising:

feeding the aqueous liquid mixture feed stream containing dispersed ice crystals which float in the liquid into an inlet of an enclosed vessel comprising elements designed, sized and arranged for inhibiting ice deposition including a shell having a vertical axis and which is circular in horizontal section for most of its height, and with the vessel having upper and lower ends; the shell including a conical portion with the apex at the upper end of the vessel; and with the aqueous liquid mixture feed stream inlet tangential to the vessel and communicating with the vessel interior space between the vessel upper and lower ends;

removing an aqueous liquid mixture more concentrated in ice crystals than the feed stream through an outlet near the apex of the conical portion communicating with the vessel interior space;

removing an aqueous liquid mixture less concentrated in ice crystals than the aqueous liquid feed stream through an outlet near the other end of the vessel communicating with the vessel interior space; and

the vessel interior walls being smooth faced and the vessel interior space is unobstructed thereby permitting the aqueous liquid mixture to flow freely therein so that the ice crystals separate largely by gravity.

4,453,961

METHOD OF MAKING GLASS OPTICAL FIBER

George E. Berkey, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,056
Int. Cl.[3] C03B *37/025*
U.S. Cl. 65—3.12 13 Claims

1. A method of forming a high purity glass article comprising the steps of

providing a substantially cylindrical mandrel,

applying at least one coating of particulate glass to the outside peripheral surface of said mandrel, removing said mandrel to form a porous preform having an aperture therein,

heating said porous preform to form an elongated, consolidated glass preform having a longitudinal aperture therethrough,

closing one end of said aperture,

evacuating said aperture, and

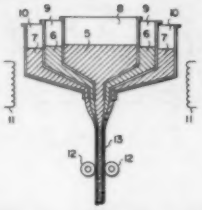
closing the remaining end of said aperture, the entire expanse of said aperture between said ends remaining open to form the high purity glass article.

4,453,962

METHOD OF MANUFACTURING A FLEXIBLE OPTICAL FIBER BUNDLE

Yubo Harada; Tsutomu Maruyama; Yoshiyuki Kumakura, and Shigeo Kuwayama, all of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jun. 8, 1982, Ser. No. 386,441
Claims priority, application Japan, Jun. 8, 1981, 56-87941
Int. Cl.[3] C03B *37/025;* C03C *23/00*
U.S. Cl. 65—3.15 2 Claims



1. A method of manufacturing a flexible optical fiber bundle comprising the steps of:

(a) forming a number of three-layer optical fibers each including an innermost layer of core glass having a high refractive index, an intermediate layer of cladding glass having a low refractive index and a high resistance to acids, and an outermost layer of acid-soluble glass;

(b) bonding together the number of three-layer optical fibers by means of adhesive which can be removed by applying heat;

(c) treating the bonded optical fibers with heat or heat and pressure to fuse them together throughout their length and remove said adhesive;

(d) heating said stretching the fused optical fibers to obtain a stretched optical fiber bundle; and

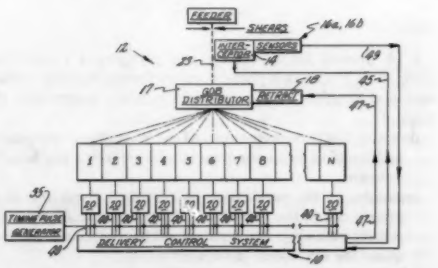
(e) processing the stretched optical fiber bundle with an acid to leach away the layer of acid-soluble glass.

4,453,963

METHOD AND APPARATUS FOR CONTROLLING THE DELIVERY OF GOBS TO A SECTION OF A GLASSWARE FORMING MACHINE

John P. Larson, Granby, and Robert J. Japenga, Simsbury, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 29, 1982, Ser. No. 403,245
Int. Cl.[3] C03B *7/16*
U.S. Cl. 65—29 15 Claims



1. A system for selectively enabling periodic delivery of at least one gob of molten glass to each section of a multiple section glassware forming machine, comprising:

timing means for producing a reference point in the cycle of operation of said machine;

means connected to said timing means and to each of said sections for producing a respective delivery enable pulse signal during respective predetermined times relative to said reference point, each said delivery enable signal corresponding to a respective section;

means for producing a plurality of predetermined first time windows, each respectively associated with the leading edge of one of said delivery enable signals;

means for producing a plurality of predetermined second time windows, each respectively associated with the trailing edge of one of said delivery enable signals;

means responsive to said delivery enable signal producing means and to said first and second time window producing means for determining if any one of said leading edges occurs within its respective first time window and if any one of said trailing edges occurs within its respective second time window, and for producing after activation of said system, with respect to each respective section a first signal upon the first occurrence of said leading edges within its respective first time window and for continuing said first signal with respect to its respective section until that section's leading edge or trailing edge occurs outside its respective time window and thereafter producing and continuing a second signal with respect to that section;

means responsive to each of said first signals for enabling gob delivery to its respective section and responsive to each of said second signals for disabling same.

8. A method for controlling periodic delivery of at least one gob of molten glass to a section of a multiple section glassware forming machine, said gob being periodically distributed to said section via cyclically movable gob distributor, a gob interceptor interposed before said gob distributor, said interceptor being movable between a normal retracted delivery position to enable gob delivery and an extended intercept position to disable gob delivery, said interceptor being retracted in response to a delivery enable pulse signal and extended in response to the absence thereof, said delivery enable signal occurring during a predetermined time period relative to the cycle of operation of said machine, said method comprising the steps of:

monitoring said delivery enable signal;

determining a predetermined first time window relative to the leading edge of said pulse;

determining a predetermined second time window relative to the trailing edge of said pulse;

determining whether (1) said leading edge occurs within said first window and (2) said trailing edge occurs within said second window;

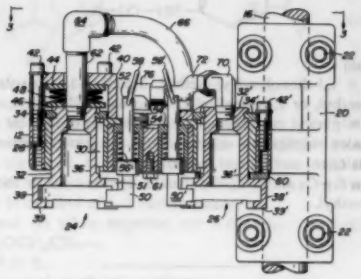
placing said interceptor in said intercept position in the event said leading edge does not occur within said first window or said trailing edge does not occur within said second window.

4,453,964
AIR DISTRIBUTING MECHANISM FOR GLASS FORMING APPARATUS

Edward Parkell, Millville, N.J., assignor to Maul Technology Corporation, Millville, N.J.

Filed Jul. 12, 1982, Ser. No. 397,632
Int. Cl.³ C03B 9/36
U.S. Cl. 65—261 **8 Claims**

1. A mechanism for transmitting air to a parison in a I.S. glass forming machine comprising an arm having means at one end for attachment to a vertical shaft, a first unit supported by the other end of said arm, at least one additional unit supported by said arm between its ends, each unit having a holder open at its bottom end and into which an air distributing member may be removably inserted from below, a first latch which is spring biased downwardly on said arm, said latch being located adjacent said first holder for preventing relative rotation between said first holder and an air distributing member to be supported thereby, a second latch on said arm, said second latch being spring biased downwardly and being adjacent said second holder for preventing relative rotation between said second holder and an air distributing member to be supported thereby, said arm including a manifold, said manifold communicating with a port in the upper end of each holder by exposed flexible



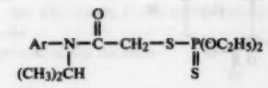
conduits, said first holder being connected to its associated exposed conduit by a rigid hollow member, said rigid member being connected to said first holder in an airtight manner and communicating with said port of the first holder such that said first holder and its associated conduit are movable axially together as a unit.

4,453,965
N-ISOPROPYLCARBANILYLMETHYL DITHIOPHOSPHATES AS PRE-EMERGENT HERBICIDES

Natu R. Patel, 7214 W. 71st Ter., Overland Park, Kans. 66204

Continuation of Ser. No. 145,943, May 2, 1980, abandoned, which is a division of Ser. No. 815,335, Jul. 13, 1977, abandoned.
This application Sep. 11, 1981, Ser. No. 301,889
Int. Cl.³ A01N 57/14; C07F 9/165
U.S. Cl. 71—87 **8 Claims**

1. A method of combating undesired vegetation comprising applying pre-emergently at least one pound per acre of crop of a compound having the structural formula:



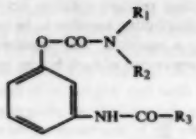
in which Ar represents 3,4-dichlorophenyl, p-fluorophenyl, p-nitrophenyl or p-chlorophenyl.

4,453,966
CARBAMINIC ACID ESTERS WITH HERBICIDAL PROPERTIES

Gerhard Boroschewski; Ludwig Nüsslein, and Friedrich Arndt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 087,637, Oct. 23, 1979, Pat. No. 4,344,790.
This application Jan. 4, 1982, Ser. No. 337,001
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844806
Int. Cl.³ A01N 43/28; C07D 317/30
U.S. Cl. 71—88 **6 Claims**

1. A compound of the formula



wherein

R_1 is 1,3-dioxolan-2-yl-methyl, 2-methyl-1,3-dioxolan-4-yl-methyl, or 2,2-dimethyl-1,3-dioxolan-4-yl-methyl;

R_2 is phenyl optionally mono- or disubstituted by one or more substituents selected from the group consisting of halogen, methyl and methoxy; and

R_3 is C_1–C_8 alkyl, C_2–C_8 alkenyl, cyclopropyl or trichloromethyl.

4,453,967

HOMOBRASSINOLIDE COMPOUNDS WHICH ARE STEROIDS HAVING PLANT GROWTH PROMOTING ACTIVITY

Kenji Mori, Tokyo, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka and Earth Chemical Company, Limited, Hyogen, both of, Japan

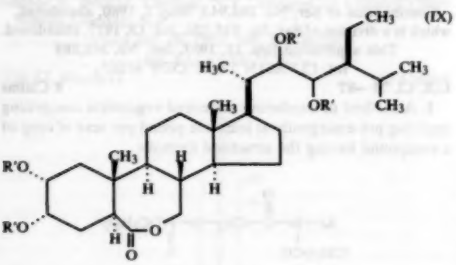
Continuation of Ser. No. 264,045, May 15, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,487

Claims priority, application Japan, May 16, 1980, 55/65602

Int. Cl.³ C07D *313/10*; **A01N** *43/22*

U.S. Cl. 71—88 **2 Claims**

1. A compound of the formula:



(IX)

wherein R' is a lower alkanoyl.

4,453,968

3-PERHALOALKYLHYDROXY-OXAZOLIDINES AND THIAZOLIDINES HERBICIDAL ANTIDOTES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

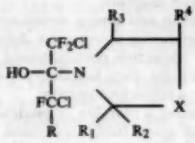
Division of Ser. No. 191,218, Sep. 26, 1980, Pat. No. 4,354,867, which is a division of Ser. No. 077,889, Sep. 21, 1979, Pat. No. 4,259,500. This application Jul. 26, 1982, Ser. No. 401,486

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—90 **5 Claims**

1. A composition comprised of

(a) an antidotally effective amount of a compound of the formula



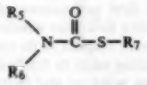
in which

R is selected from the group consisting of chloro and fluoro;

R_1–R_4 are each independently selected from the group consisting of hydrogen and 1–4 carbon alkyl; and

X is sulfur; and

(b) an herbicidally effective amount of a thiocarbamate of the formula



in which

R_5 is selected from the group consisting of 1–6 carbon alkyl and 2–6 carbon alkenyl;

R_6 is selected from the group consisting of 1–6 carbon alkyl, 2–6 carbon alkenyl, cyclohexyl and phenyl; or

R_5 and R_6 together form a hexamethylene group; and

R_7 is selected from the group consisting of 1–6 carbon alkyl, 1–6 carbon haloalkyl, 5–10 carbon alkylene ring, phenyl, substituted phenyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo, benzyl and substituted benzyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo.

4,453,969

THIENYLGLYOXYLONITRILE OXIMINO PHENYLCARBAMATES FOR THE PROTECTION OF CROPS AGAINST INJURY BY HERBICIDES

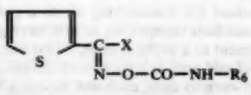
Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 112,049, Jan. 14, 1980, Pat. No. 4,416,686, which is a continuation of Ser. No. 938,205, Aug. 30, 1978, abandoned. This application Sep. 28, 1982, Ser. No. 425,814

Int. Cl.³ A01N *43/10*; **C07D** *333/24*

U.S. Cl. 71—90 **5 Claims**

4. A method for protecting cultivated plants from being damaged by harmful agricultural chemicals selected from the group consisting of triazines, haloacetanilides and pyridyloxyphenoxypropionates, which method comprises applying to said plants, to parts thereof or to the locus of their growth, an antidotally effective amount of a compound of the formula



in which the thiophene ring is optionally substituted by halogen, and wherein

X is cyano or lower alkyl, and

R_6 is lower alkyl or phenyl optionally substituted by halogen or trifluoromethyl.

4,453,970
HERBICIDAL TRIAZINYL SULFONAMIDES

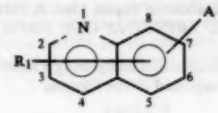
George Levitt; Chin-Lung Yeh, both of Wilmington, Del., and John C. Budzinski, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 298,661, Sep. 3, 1981, Pat. No. 4,369,320, which is a continuation-in-part of Ser. No. 203,637, Nov. 3, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 421,823

Int. Cl.³ C07D *251/18, 251/50, 251/52;* A01N *43/70*

U.S. Cl. 71—93 29 Claims

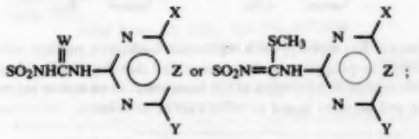
1. A compound selected from



I

wherein

A is



R_1 is H, F, Cl, Br, OCH_3, CH_3, NO_2, CO_2R_2, $S(O)_nR_3$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$ or OSO_2R_6;

R_2 is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

R_3 is C_1–C_4 alkyl;

R_4 and R_5 are independently C_1–C_4 alkyl;

R_6 is C_1–C_4 alkyl or CF_3;

n is 0, 1 or 2;

X is C_1–C_2 alkyl, C_1–C_2 alkyl substituted with OCH_3, CF_3, C_1–C_3 alkoxy, $N(CH_3)_2$, $NHCH_3$, NH_2, or SCH_3;

Y is CH_3, OCH_3 or Cl;

Z is N; and

W is O or S;

and their agricultural salts; provided that

(1) A is in the 5 or 8 position of the quinoline ring;

(2) when R_1 is NO_2, CO_2R_2, $S(O)_nR_3$, $SO_2NR_4R_5$, $SO_2N(OCH_3)CH_3$ or OSO_2R_6, then R_1 is at the 6-position when A is at the 5-position, and R_1 is at the 7-position when A is at the 8-position of the quinoline ring; 7-position of the quinoline ring;

(3) the total number of carbon atoms of R_4 and R_5 is less than or equal to 5; and

(4) when Y is Cl, then Z is CH and X is NH_2, $NHCH_3$, $N(CH_3)_2$ or OCH_3.

23. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,453,971
HERBICIDAL SULFONAMIDES

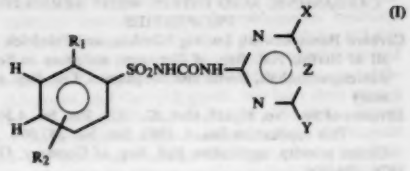
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 242,581, Mar. 11, 1981, Pat. No. 4,369,058, which is a continuation-in-part of Ser. No. 142,436, Apr. 21, 1980, abandoned, which is a division of Ser. No. 955,504, Oct. 27, 1978, Pat. No. 4,225,337, which is a continuation-in-part of Ser. No. 937,552, Sep. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 840,168, Oct. 6, 1977, abandoned. This application Sep. 22, 1982, Ser. No. 421,414

Int. Cl.³ C07D *251/46, 251/18;* A01N *43/66*

U.S. Cl. 71—93 18 Claims

1. A compound selected from



(I)

wherein

R_1 is H, Cl, Br, F, CH_3, OCH_3 or NO_2;

R_2 is $—NHCOSR_3$, $—NHCOR_3$, or $—NR_6R_7$;

R_3 is alkyl of 1–4 carbon atoms;

R_6 is H or alkyl of 1–3 carbon atoms;

R_7 is H or alkyl of 1–3 carbon atoms; or

R_6 and R_7 taken together are $—(CH_2)_n—$ or $—CH_2CH_2OCH_2CH_2—$;

n is 4 or 5;

X is methyl, methoxy or ethoxy;

Y is methyl or methoxy; and

Z is N;

provided that:

(a) when R_2 is ortho to the sulfonylureido group, then R_1 must be hydrogen.

12. A method for the control of undesirable vegetation comprising applying to the locus of such undesirable vegetation a herbicidally effective amount of a compound of claim 1.

4,453,972
PHENOXY PYRIDINE DERIVATIVES AND HERBICIDAL COMPOSITIONS CONTAINING SAME

Ludwig Schröder, Ingelheim am Rhein; Werner Stransky, Gau-Algesheim; Rudolf Mengel, and Gerbert Linden, both of Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co., KG, Ingelheim am Rhein, Fed. Rep. of Germany

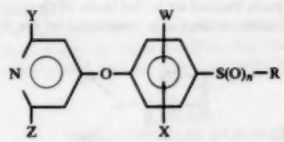
Continuation of Ser. No. 321,445, Nov. 16, 1981. This application Jan. 24, 1983, Ser. No. 460,471

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044856

Int. Cl.³ A01N *43/40;* C07D *213/63*

U.S. Cl. 71—94 8 Claims

1. A compound of the formula



(I)

wherein

n is 0, 1, or 2;

R is an alkyl radical having from 1 to 4 carbon atoms, unsubstituted or substituted by one or more fluorine or chlorine atoms, alkenyl radical having from 2 to 4 carbon atoms, a benzyl radical, or a chlorine-substituted or methyl-substituted benzyl radical;

W and X, which may be identical or different, are each a hydrogen, chlorine, fluorine, bromine, or iodine atom or alkyl having from 1 to 4 carbon atoms;

Y is a hydrogen, chlorine, fluorine, or bromine atom or alkyl having from 1 to 4 carbon atoms; and

Z is a chlorine or fluorine atom.

4,453,973

CARBAMINIC ACID ESTERS WITH HERBICIDAL PROPERTIES

Gerhard Boroschewski; Ludwig Nüssslein, and Friedrich Arndt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

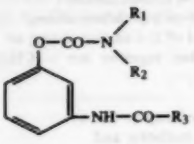
Division of Ser. No. 87,637, Oct. 23, 1979, Pat. No. 4,344,790. This application Jan. 4, 1982, Ser. No. 337,004

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844806

Int. Cl.³ A01N *37/46*; C07C *125/067*

U.S. Cl. 71—105 23 Claims

1. A compound of the formula



wherein

R_1 is cyano-C_1-C_2-alkyl;

R_2 is phenyl optionally mono- or disubstituted by one or more substituents selected from the group consisting of halogen, methyl and methoxy; and

R_3 is C_1–C_8 alkyl, C_2–C_8 alkenyl, cyclopropyl or trichloromethyl, or R_1 is methyl or ethyl, R_2 is α-cyanobenzyl or 1-cyano-2-phenylethyl and R_3 is ethyl.

22. A herbicidal composition containing a herbicidally effective amount of at least one compound as described in claim 1, further comprising carrier material.

4,453,974

PHENYL- AND NAPHTHYL-GLYOXYLONITRILE OXIMINO CARBAMATES FOR THE PROTECTION OF CROPS AGAINST INJURY BY HERBICIDES

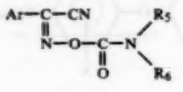
Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 112,049, Jan. 14, 1980, Pat. No. 4,416,686, which is a continuation of Ser. No. 938,205, Aug. 30, 1978, abandoned. This application Sep. 28, 1982, Ser. No. 425,815

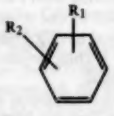
Int. Cl.³ A01N *37/34*; C07C *131/00*

U.S. Cl. 71—105 8 Claims

1. A method for protecting cultivated plants from being damaged by harmful agricultural chemicals selected from the group consisting of triazines, haloacetanilides and pyridyloxyphenoxypropionates, which method comprises applying to said plants, to parts thereof or to the locus of their growth, an antidotally effective amount of a compound of the formula



in which Ar is naphthyl or



wherein

R_1 is hydrogen, chlorine, bromine, tert.butyl, methoxy, ethoxy, nitro, trifluoromethyl or dimethylamino,

R_2 is hydrogen or chlorine,

R_5 is hydrogen, methyl or ethyl, and

R_6 is C_1–C_4-alkyl, chloroethyl, methoxymethyl, or phenyl optionally substituted by fluorine, chlorine, C_1–C_3-alkyl or trifluoromethyl.

4,453,975

HERBICIDAL COMPOSITION

Tetsuo Takematsu, Utsunomiya; Akinori Suzuki, Chiba, and Kazuya Toda, Ichikawa, all of Japan, assignors to Yashima Chemical Industrial Co., Ltd., Tokyo, Japan

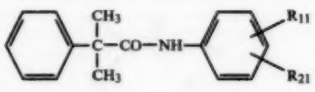
Filed Feb. 24, 1982, Ser. No. 351,926

Claims priority, application Japan, Mar. 3, 1981, 56/29319

Int. Cl.³ A01N *37/22*; C07C *103/76*

U.S. Cl. 71—118 15 Claims

1. A herbicidal composition comprising a herbicidally effective amount of a compound of the formula



wherein R_{11} and R_{21} each represents hydrogen, methyl, ethyl, propyl, isopropyl or methoxy provided that R_{11} and R_{21} do not both represent hydrogen at the same time, as an active ingredient and an inert liquid or solid carrier or diluent.

4,453,976

CORROSION RESISTANT THERMAL SPRAY ALLOY AND COATING METHOD

John W. Smythe, Birmingham, Mich., assignor to Alloy Metals, Inc., Troy, Mich.

Filed Aug. 25, 1982, Ser. No. 411,197

Int. Cl.³ B05D *1/10*

U.S. Cl. 75—251 6 Claims

1. A thermal spray powder for applying a corrosion resistant tenacious coating on metal parts subject to a corrosive atmosphere, having a particle size range suitable for thermal spraying and consisting essentially of the following composition, in weight percent:

12 to 20% chromium,

20 to 40% molybdenum,

0.3 to 1% copper,

0 to 10% iron,

impurities, and additions including carbon, up to 1% and the balance nickel.

4,453,977

LOW SILVER CONTAINING DENTAL AMALGAM ALLOYS

Charles F. Burns, Lansdowne, and Edward J. Pilcicki, Gilbertsville, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 15, 1982, Ser. No. 364,135

Int. Cl.³ B22F *1/00*; C22C *5/06*

U.S. Cl. 75—255 3 Claims

1. In a dental amalgamable composition comprising about 50 to 95% by weight of at least one amalgamable alloy of 40 to 75% by weight of silver, 20 to 30% by weight of tin, 2 to 30% by weight of copper, and 0.5 to 30% by weight of at least one member selected from the group consisting of indium, zinc, gold, mercury, manganese, cadmium, and aluminum, the improvement comprising adding to this composition from about 5 to about 50% by weight of at least one member selected from the group consisting of Cu_6Sn_5, Cu_3Sn, and a mixture thereof wherein the member is in the form of lathe-cut, spherical shaped, or irregular shaped particles and is composed of 30 to 70% by w.ight of copper and 70 to 30% by weight of tin.

4,453,978

PROCESS FOR PRODUCING AN AE FLY ASH CONCRETE COMPOSITION

Hirotake Okimura, Yokohama, and Hideyuki Tanaka, Fukuoka, both of Japan, assigaors to Onoda Cement Company, Ltd., Onoda, Japan

Filed Sep. 13, 1982, Ser. No. 417,156
Claims priority, application Japan, Sep. 22, 1981, 56-148713
Int. Cl.³ C04B 21/10
U.S. Cl. 106—88 2 Claims

1. A process for producing a concrete mixture containing an air-entrained fly ash cement comprising mixing an aggregate, water, and an air-entraining agent with fly ash cement to produce an air-entrained fly ash concrete composition characterized in that polyoxyethylenesorbitan oleate having 23 to 33 moles of ethylene oxide group per mole of said polyoxyethylenesorbitan oleate is used as said air-entraining agent.

4,453,979

DISPERSION OF HYDROPHILIC GUMS TO FORM NON-SWELLING AQUEOUS ALCOHOLIC MIXTURES

Dominick F. DeMasi, Norwood, N.J., and Gregg S. Scheideler, Hauppauge, N.Y., assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 23, 1983, Ser. No. 477,810
Int. Cl.³ C08L 1/08; A01N 25/00; A61K 7/16
U.S. Cl. 106—188 9 Claims

1. A method of formulating a lump-free alcohol-water-gum containing composition comprising:

(a) preparing a blend of a minor amount of water and a major amount of a polyethylene glycol, solid at room temperature;

(b) introducing into the polyethylene glycol-water blend a hydrophilic gum resulting in a final weight ratio water:gum of about 20:1 to 1.3:1 and polyethylene glycol:gum ratio of about 25:1 to 2:1;

(c) intimately mixing the resultant slurry; and

(d) feeding the slurry into a water containing formulation.

4,453,980

METHODS FOR COATING AND PATCHING WITH ASPHALT COMPOSITIONS

Arthur T. Ward, 4 Blythewood Rd., Baltimore, Md. 21210

Continuation-in-part of Ser. No. 205,151, Nov. 10, 1980, Pat. No. 4,373,960. This application Sep. 30, 1982, Ser. No. 432,403
Int. Cl.³ C08L 95/00
U.S. Cl. 106—281 R 24 Claims

1. In a method for patching a structure having a local discontinuity therein comprising:

(a) spreading out over said discontinuity and the surface area defining the perimeter of said discontinuity, a coating composition, comprising a rapid curing liquid asphalt and from about 0.1 to 13.5% tall oil, based on the weight of the rapid curing liquid asphalt to form a first coating;

(b) applying on the top of said coating a patching composition comprising: (1) mineral aggregate in combination with (2) a non-emulsified asphalt binder composition which contains essentially no water and comprising a medium curing liquid asphalt, and tall oil, said asphalt binder composition being present in an amount sufficient to fill said discontinuity to a level at least equal to the structure defining the perimeter of said discontinuity.

4,453,981

DIRECT PREPARATION OF SLURRIES FOR CERAMIC BOARD

Mark P. Taylor, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,540
Int. Cl.³ C09C 1/02
U.S. Cl. 106—291 6 Claims

1. A method of producing a slurry composed of ion-exchanged, synthetic mica crystals dispersed in a polar liquid which comprises providing a synthetic, lithium and/or sodium, water-swelling mica body that is fully or predominantly crystalline, the crystals being selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite, and high shear mixing the mica body in a polar liquid containing a contacting source of larger exchangeable cations to simultaneously disintegrate the mica and effect an exchange of larger cations from the contacting source with lithium and/or sodium ions from the mica crystals, said slurry consisting of very thin individual flakes aggregated together in a patchwork to form larger flocs.

4,453,982

STABILIZED METAL PIGMENTS AND METHOD OF PRODUCING SAME

Werner Wilfinger; Klaüs L. Behmel, both of Graz, and Herbert Stania, Feldkirchen bei Graz, all of Austria, assignors to Vianova Kunstharz A.G., Werndorf, Austria

Filed Dec. 6, 1982, Ser. No. 447,098
Claims priority, application Austria, Dec. 18, 1981, 5436/81
Int. Cl.³ C09C 1/00
U.S. Cl. 106—308 M 22 Claims

1. Process for stabilizing metal pigments against chemical influences for use in paint systems comprising blending a metal pigment with the reaction product of an amine-aldehyde condensation product etherified with low molecular weight alcohols and an acidic phosphoric acid derivative which has the formula

$$P(O)R_x(OH)_y$$

or a polyphosphoric acid derivative of the general formula

$$[P(O)R_x(OH)_{y-z}O_{0.5\,z}]_n,$$

wherein R is a radical linked to the phosphoric or polyphosphoric acid radical through a C—P- or C—O—P-linkage and which contains a group reactive with said amine-aldehyde condensation product; x being a number less than 3 and x+y equaling 3, z being the number of P—O-links stemming from a P-atom and being less than y, and n being the degree of polymerization, at from about 10 to 80° C. until hydrogen formation caused by the reaction ceases; the weight ratio between said reaction product and metal pigment expressed by the value

$$K = \frac{\text{weight of reaction product}}{\text{weight of metal}} \times \text{acid number of said reaction product,}$$

being at least 1.

11. The process of claim 1 wherein said metal pigment is in the form of a metal powder based on aluminum, zinc, magnesium, copper, steel, bronze, brass, and mixtures thereof.

4,453,983

DIPHASE DRAIN CLEANER

Bernard Berkeley, Evanston, Ill., assignor to Hysan Corporation, Chicago, Ill.

Filed May 3, 1982, Ser. No. 374,450
Int. Cl.³ B08B 3/08, 9/02
U.S. Cl. 134—22.14 13 Claims

9. A diphase drain cleaning process for cleaning drains comprising contacting drain plumbing with a composition consisting essentially of from 50 to 99% by weight of at least 20% sulphuric acid solution and from 1 to 50% by weight of a polystyrene solvent selected from the group consisting of monochlorotoluene, dichlorobenzene, and mixtures thereof, wherein the sulphuric acid solution and the polystyrene solvent form two layers of liquid inside the drain plumbing.

4,453,984

METHOD FOR REMOVING ELECTRICALLY CONDUCTIVE PASTE FROM A SCREENING MASK

Eugene R. Mondou, Poughkeepsie, and Frederick W. Schneider, Ulsterville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,930
Int. Cl.³ B08B 3/08, 9/00
U.S. Cl. 134—22.19 12 Claims

1. In a process for independently removing polar and non-polar residues of electrically conducting screening paste embodying at least an electrical conductive material, a resin, and a solvent for the resin, from screening masks, the improvement comprising

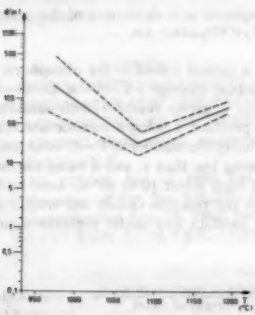
contacting the mask to be cleaned with a liquid solvent that at least includes a solvent selected from the group consisting of N-Cyclohexyl-2-Pyrrolidone, N-Isopropyl-2-Pyrrolidone, Ethyl Hexyl Acetate, Dibutyl Carbitol, and mixtures thereof.

4,453,985

PROCESS FOR THE PRODUCTION OF A FINE-GRAINED WORK PIECE AS FINISHED PART FROM A HEAT RESISTANT AUSTENITIC NICKEL BASED ALLOY

Gernot Gessinger, and Günther Schröder, both of Birmenstorf, Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 1, 1983, Ser. No. 463,015
Claims priority, application Switzerland, Feb. 18, 1982, 1019/82
Int. Cl.³ C22F 1/10
U.S. Cl. 148—11.5 N 3 Claims



1. A process for the production of a fine-grained work piece as a finished part with a median crystallide size of not more than 100μ from a heat resistant austenitic nickel based alloy, whereby the initial material may have any crystallide size, characterized by the fact that the forging blank is transformed in a single operational step within a temperature range of between 960° C. and 1200° C. and with a shaping speed ϵ of 1×10^{-1} to 1 sec^{-1}, by isothermal forging in one forging process into the final product, whereby ϵ is defined as follows:

$$\dot{\epsilon} = d\left|\frac{\ln\frac{A_0}{A_f}}{dt}\right|$$

A_0=surface of cross section of work piece before reshaping
A_f=surface of cross section of work piece after reshaping
ln=natural logarithm
t=time in seconds

4,453,986

TUBULAR HIGH STRENGTH LOW ALLOY STEEL FOR OIL AND GAS WELLS

David L. Sponseller, Ann Arbor, Mich., and John A. Straatman, Poland, Ohio, assignors to Amax Inc., Greenwich, Conn.

Filed Oct. 7, 1982, Ser. No. 433,326
Int. Cl.³ C21D 8/10
U.S. Cl. 148—12 F 3 Claims

1. As an article of manufacture, a quenched and tempered high strength low-alloy steel tubular product of the L-80 and N-80 type suitable for use as an oil well tubular member having a yield strength of a least 90 ksi, said product being formed of a composition consisting essentially of

about 0.15 to 0.20% C, about 0.1 to 0.2% Mo, about 0.002 to 0.03% N, about 1 to 1.4% Mn, about 0.15 to 0.25% Si, and the balance essentially iron,

said product having been produced by heating to an austenitizing temperature of about 1550° F. to 2100° F. and holding at temperature for a time sufficient to convert the microstructure to austenite and then liquid quenching said product followed by tempering the quenched product at a temperature of about 1050° F. to 1325° F. for a time sufficient to produce desired properties and characterized metallographically by a predominantly martensitic structure with some bainite.

4,453,987

METHOD FOR PRODUCING EDGED TOOLS

Tohru Arai, Toyoake, and Yoshihiko Sugimoto, Nagoya, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Apr. 6, 1982, Ser. No. 365,959
Claims priority, application Japan, Apr. 14, 1981, 56/55830
Int. Cl.³ C21D 1/48
U.S. Cl. 148—15.5 13 Claims

1. A method for producing an edged tool without the need to grind a carbide layer, comprising the steps of:

(a) immersing tool material with a cutting edge in a molten-salt bath comprising molten boric acid or borate and a carbide-forming element (to form a carbide layer on the surface of said tool material, said tool material being made of ferrous alloy containing at least 0.4 percent by weight of carbon);

(b) heating said tool material to a temperature not lower than the austenite-transformation temperature of said material in a non-oxidizing gas atmosphere for a predetermined period of time; and

(c) rapidly cooling and thus hardening said heated material.

4,453,988

COATINGS FOR RUSTED METALLIC SURFACES

William Slater, and Michael Kenny, both of Louisville, Ky., assignors to Grow Group, Inc., Louisville, Ky.

Filed Jan. 12, 1983, Ser. No. 457,399
Int. Cl.³ C23F 9/00
U.S. Cl. 148—6.14 R 7 Claims

1. A method of coating a rusted metallic surface comprising (a) removing loose rust particles by superficial surface treatment and (b) applying a coating for rusted metal, comprising

about 55–95% by weight based on the total coating weight of a poly(meth)acrylic monomer selected from dicyclopentadiene acrylate or methacrylate, dicyclopentadiene alkoxy acrylate or methacrylate, polyacrylates of alkyl polyols or alkyl ether polyols, and polymethacrylates of alkyl polyols or allyl ether polyols having a vapor pressure no greater than about 0.5 mmHg and a viscosity in the range of about 3–100 cps, about 0.5–5.0% by weight on the same basis of a peroxide system, and about 5.0–35.0% by weight on the same basis of a drying oil-based oxygen scavenger system.

4,453,989

SOLID SENSITIZERS FOR WATER-IN-OIL EMULSION EXPLOSIVES

John J. Mullay, Hazelton, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Apr. 5, 1982, Ser. No. 365,787
Int. Cl.³ C06B *45/02*
U.S. Cl. 149—21 **15 Claims**

1. A cap sensitive water-in-oil emulsion explosive composition comprising:

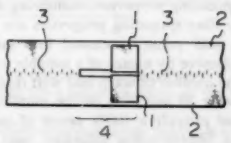
(a) about 1.0 to about 90% inorganic nitrates;
(b) up to about 30% inorganic perchlorate;
(c) from about 4 to about 20% water;
(d) about 0.2 to 5.0% emulsifier;
(e) from about 2 to about 10% carbonaceous fuels;
(f) up to about 40% auxiliary sensitizers;
(g) from about 0.25 to about 10% bulking agents;
(h) up to about 20% additional fuels; and
(i) from about 1 to about 50% sensitizing/densifying agents, said percentages being based on the weight of the total composition.

4,453,990

METHOD AND APPARATUS FOR ATTACHING REINFORCING MATERIAL TO SLIDE FASTENER CHAIN

Kihei Takahashi, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,984
Claims priority, application Japan, Jun. 16, 1981, 56-92444
Int. Cl.³ B32B *31/10*; A44B *19/24*
U.S. Cl. 156—66 **2 Claims**



1. A method of attaching a strip of reinforcing tape to a slide fastener chain having alternate element-containing and element-free sections along one thickened, reinforced side edge, wherein the fastener element chain is advanced intermittently in the longitudinal direction thereof and stopped each time an element-free section thereof arrives at a reinforcing tape attaching station, said method comprising the steps of (a) through (e) executed while said fastener chain is stopped:

(a) maintaining the fastener chain in a state where the chain in tensioned longitudinally, with an element-free section thereof being located at a predetermined position within said reinforcing tape attaching station;
(b) positioning a strip of reinforcing tape, obtained by cutting a reinforcing tape to a predetermined length, at a predetermined position in such a manner that the center line of the strip of reinforcing tape lies parallel to the thickened side edge of said element-free section and the surface of the strip lies at a right angle to the opposed surfaces of said element-free section;
(c) moving the strip of reinforcing tape, located at said predetermined position, transversely across said fastener chain from said thickened side edge of the element-free section to fold over said strip onto both surfaces of said element-free section;
(d) attaching the strip of reinforcing tape solely to the vicinity of said thickened side edge of the element-free section by applying pressure to the vicinity of said thickened side edge over which said strip is folded; and
(e) subsequently attaching the remainder of the strip of reinforcing tape to the opposed surfaces of the element-free section neighboring said thickened side edge which bears said strip attached in step (d) by applying pressure to both said opposed surfaces while retaining the pressure applied in step (d) to prevent deformations in the strip of reinforcing tape.

4,453,991

PROCESS FOR MAKING ARTICLES COATED WITH A LIQUID COMPOSITION OF PERFLUORINATED ION EXCHANGE RESIN

Walther G. Grot, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 259,506, May 1, 1981, Pat. No. 4,433,082. This application Sep. 16, 1982, Ser. No. 418,817
Int. Cl.³ B32B *35/00, 27/06, 27/12, 27/28*
U.S. Cl. 156—94 **20 Claims**

1. A process for making a coated article which comprises applying to a substrate a liquid composition of a perfluorinated ion exchange polymer having $-SO_3M$ functional groups wherein M is H, Na, K or NR_4, and each R is separately H, CH_3 or C_2H_5, in a liquid medium, said liquid composition being liquid at room temperature, said liquid composition being prepared by the process comprising contacting a said polymer having an equivalent weight in the range of 1025 to 1500 with a mixture comprising 20 to 90% by weight of water and 10 to 80% by weight of at least one member of the group consisting of methanol, ethanol, n-propanol, isopropanol, n-butanol, 2-butanol, 2-methoxyethanol, 2-ethoxyethanol, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, dioxane and acetonitrile at a temperature in the range of about 180° and 300° C. and below the critical temperature(s) of said member(s) employed, for at least 0.5 hour in a closed vessel, and separating from said liquid composition any lower density liquid phase present, followed by drying.

4,453,992

METHOD OF MAKING A PNEUMATIC TIRE HAVING A LUBRICANT-CONTAINING POCKET INTEGRALLY FORMED THEREIN

Tiong H. Kuan, Stow; Joseph Pantuso, Springfield Township, Summet County, and John G. Sommer, Hudson, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 176,747, Aug. 6, 1980, abandoned, which is a division of Ser. No. 33,341, Apr. 26, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 270,959
Int. Cl.³ B60C *21/08, 19/00*; B29H *17/14*; B32B *31/00*
U.S. Cl. 156—115 **1 Claim**

1. A method of making a pneumatic tire comprising a carcass, a tread portion, two sidewall portions each terminating in a bead region, and at least one of said sidewall portions comprising two transversely spaced layers of material which define therebetween at least one integral pocket entirely within the tire structure, a lubricant composition in said pocket, the pocket being positioned in the tire in the region of a portion of the interior surface of the tire which contacts a second portion of the interior surface of the tire upon substantial underinflation or deflation of the tire during use thereof on a wheel such

that the lubricant composition in said pocket is releasable therefrom onto the interior surface of the tire, said method comprising:

(a) positioning in a conventionally constructed tire carcass a gum strip covering one opening of an O-ring onto a band of release coating on an uncured tire inner liner, the O-ring having a hole in the center filled with a non-curable puncture sealant composition;

(b) covering the band of release coating and the inner liner adjacent the release coating with a strip of uncured rubber, wider than the band of release coating and curing the tire in a conventional manner; and

(c) then injecting lubricant through the puncture sealant into the pocket.

4,453,993

METHOD OF PRODUCING REINFORCED CAST TIRES

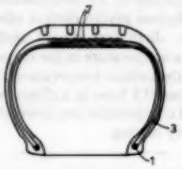
Hans J. Rau, Cologne, and Gerhard Just, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 6, 1983, Ser. No. 482,400

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214908

Int. Cl.³ B29H *17/28, 17/12;* B60C *9/16*

U.S. Cl. 156—124 **12 Claims**



1. A method for the production of reinforcement for tires having two bead rings, comprising

(a) enclosing the bead rings by a piece of cut fabric which is adapted to the size of the tire, the warp threads in the fabric running substantially perpendicular to the bead rings;

(b) joining the two sides of the fabric, such that the jointure seam runs substantially parallel to the weft direction;

(c) pushing the fabric together to at least half the circumference of the bead rings;

(d) positioning the bead rings on either side of a toroidal tire core;

(e) drawing the fabric around the rings and over the entire core; and

(f) joining the ends of the fabric together.

7. A method for the production of reinforced, cast tires having two bead rings, from castable elastomers, the tire inside the mold being restricted by a toroidal core during the formation, comprising:

(a) enclosing the bead rings by a piece of cut fabric which is adapted to the size of the tire, the warp threads in the fabric running substantially perpendicular to the bead rings;

(b) joining the two sides of the fabric, such that the jointure seam runs substantially parallel to the weft direction;

(c) pushing the fabric together to at least half the circumference of the bead rings;

(d) positioning the bead rings on either side of the core;

(e) drawing the fabric around the rings and over the entire core;

(f) joining the ends of the fabric together;

(g) installing the core into the mold; and

(h) casting the tire in the mold.

4,453,994

METHOD FOR INCREASING THE COVER OF TEXTILE FABRICS

Jacobus M. Van Dort, Almelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

PCT No. PCT/NL79/00007, 371 Date Aug. 4, 1980, 102(e) Date Jul. 28, 1980, PCT Pub. No. WO80/01171, PCT Pub. Date Jun. 12, 1980

PCT Filed Nov. 16, 1979, Ser. No. 227,107

Claims priority, application Netherlands, Dec. 4, 1979, 7811819

Int. Cl.³ B32B *31/16*

U.S. Cl. 156—154 **3 Claims**

1. A method for increasing the cover of a woven textile fabric produced from yarns, at least part of which yarns exhibit potential fiber-spreading properties, containing a fiber-bonding adhesive, which fiber-spreading properties are activatable by removing from said yarns, processed into said fabric, said fiber-bonding adhesive by means of a suitable solvent, characterized in that the number of warp and weft threads per unit of length lies between 20 and 80% of the number of warp and weft threads that provide a 100% cover of said fabric after removal of said fiber-bonding adhesive, said fiber-bonding adhesive is removed from said fabric to activate said fiber-spreading properties, said fibers are mechanically spread and, after said spreading of said fibers, the strength of said fabric which has been partially lost through said activation is at least partially restored by the application of a permanent adhesive to said fabric.

4,453,995

METHOD OF MAKING COMPARTMENTED, FILAMENT WOUND, ONE-PIECE AIRCRAFT FUEL TANKS

Edward J. Morrisey, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

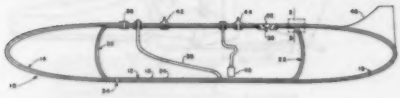
Filed Jan. 13, 1982, Ser. No. 339,258

Int. Cl.³ B65H *81/00;* B64D *37/04*

U.S. Cl. 156—172 **4 Claims**

1. A method for manufacturing a fuel tank for external mounting on an aircraft which comprises:

a. providing an elongated, generally cylindrical form having generally dome-shaped end portions;
b. winding a plurality of layers of a reinforcing filament impregnated with an adhesive resin around said cylindrical form;
c. curing said adhesive resin, thereby providing a filament-wrapped cell;
d. providing first and second aerodynamically shaped end shapes, each having an open end with an outer diameter approximately equal to the outer diameter of the filament-

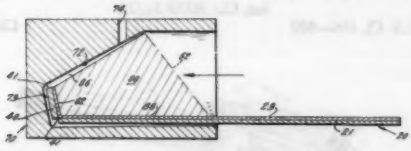


wrapped cell, said open end of each of said end shapes having an inside bevel having a slope complementary to the shape of said end portion of said cell;
e. assembling said end shapes coaxially with said cell to provide an assembly;
f. winding a plurality of layers of reinforcing filament impregnated with an adhesive resin around said assembly
g. curing said adhesive resin, thereby roviding a filament-wrapped tank; and
installing fuel filling and transfer fitments and attachment means to complete said tank.

4,453,996
PROCESS OF MAKING A BALLET TOE SHOE

Nicholas Terlizzi, Jr., North Haledon, and Donald Terlizzi, Paquannock, both of N.J., assignors to Ballet Makers, Inc., Totowa, N.J.

Division of Ser. No. 281,947, Jul. 10, 1981, Pat. No. 4,412,393. This application Aug. 18, 1983, Ser. No. 524,243
Int. Cl.³ A43B *3/00, 23/00;* **A43C** *13/14;* **A43D** *9/00*
U.S. Cl. 156—227 **7 Claims**



1. A method of making a combination of a toe box support frame and a shank for a ballet toe shoe, or the like, the method comprising:
applying a ballet toe shoe shank having a front end, with a foldable tip flap being defined on the front end of the shank, to the toe shoe sole side of a male mold member that is generally in the shape of a toe box of a ballet toe shoe, and the shank being applied to the male mold member so that the tip flap of the shank extends forward of the forward end of the male mold member;
inserting the male mold member, forward end first, into the mold cavity of a female mold member which cavity has a profile that generally conforms to the external profile of the male mold member, and the respective profiles of the male and female mold members being shaped so that there is a narrow space defined between the male and the female mold members for receiving a moldable resin material, or the like; the male mold member being inserted far enough for the tip flap at the front of the shank to contact the interior of the female mold member for then folding up the tip flap over the front end of the male mold member, whereby the tip flap is then in position to be at the front tip of the toe box support frame;
applying resin in the space between the male and the female mold members and also applying the resin over the tip flap, and allowing the resin to set for thereby defining the toe box support frame and for integrating the shank and the support frame; and
removing the toe box support frame with the shank integrated therewith from the mold members.

4,453,997
BONDING METHOD

Yutaka Hori; Makoto Sunakawa, and Michio Satsuma, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 198,995, Oct. 20, 1980, abandoned, which is a continuation of Ser. No. 25,622, Mar. 30, 1979, abandoned. This application Feb. 28, 1983, Ser. No. 468,807
Claims priority, application Japan, Jan. 31, 1979, 54-10796
Int. Cl.³ C09J *5/00, 7/00;* **B05D** *5/10;* **B65C** *9/25*
U.S. Cl. 156—305 **18 Claims**

1. A method for bonding which comprises: interposing between the articles to be bonded at least one of which has an aqueous moisture content in a normal condition of at least about 1% by weight based on the weight of the article, a moisture curable adhesive material and then heating the assembly under pressure to supply water vapor from said at least about 1% moisture-containing article to cure the adhesive material, wherein said adhesive material comprises a sheet, film or tape of at least one of a thermofusible adhesive resin and rubber containing about 0.1 to 20% by weight based on the weight of the at least one of a resin and rubber of carboxyl groups and not more than about 0.5% by weight free water and uniformly dispersed therein, a powder of an oxide of a metal of Group IIa of Mendeleev's Periodic Table having an average particle diameter of about 0.1 to 1,000μ, said at least one of a thermofusible resin and rubber having a viscosity of not more than 10^9 poises at 100° C., a weight average molecular weight of about 10,000 to 500,000 and additionally containing a conventional tackifying resin, said moisture curable adhesive material not functioning as a spontaneously curable tackifying agent obtained by adding a divalent metal oxide to a pressure-sensitive adhesive high molecular weight polymer having a carboxyl group.

4,453,998
METHOD AND APPARATUS FOR PRODUCING FINISHED FOAM PLASTIC CONTAINERS

Allan K. Cress, Baltimore, and Charles E. Busse, Jarrettsville, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.

Continuation-in-part of Ser. No. 219,520, Dec. 23, 1980, which is a continuation-in-part of Ser. No. 953,620, Oct. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 665,617, Mar. 10, 1976, Pat. No. 4,121,402. This application Sep. 1, 1982, Ser. No. 413,871
Int. Cl.³ B32B *1/00*
U.S. Cl. 156—350 **34 Claims**

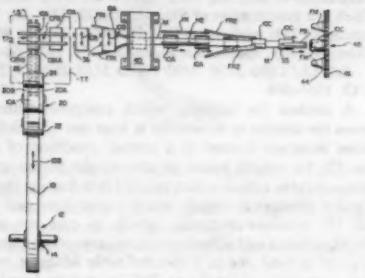
1. Means forming containers from rectangular sidewall blanks of shrinkable longitudinally oriented thermoplastic sheet material and disc shaped bottom blanks comprising:
cylindrical blank forming means for producing finished cylindrical blanks having a longitudinal side seam and with said orientation directed circumferentially of each said blank;
a plurality of forming mandrels;
mandrel movement means for sequentially indexing said mandrels into coaxial position with one end of said cylindrical mandrel means;
transfer means transferring said cylindrical blanks from said blank forming means to said forming mandrels in synchronism with the indexing of the letter with the former;
supply means for providing a plurality of disc shaped bottom blanks for said containers sequentially indexed with said forming mandrels to supply bottom blanks thereto;

means retaining said bottom blanks on said bottom portion of said forming mandrels;

heating means for heating said cylindrical blanks to a temperature sufficient to shrink said cylindrical blanks into conformed engagement with said sidewall portion and over the peripheries of said bottom blanks to form said dual tapered containers;

said mandrel movement means moving said mandrels past said heating means along a predetermined path;

bottom ironing means downstream of said heating means for compressing the overlapped portions of said sidewall and bottom blank to seal the bottom of said container;



discharge means ejecting said container from said mandrels downstream of said bottom ironing means;

drive means for continuously driving said means forming containers; and

means for selectively disconnecting said cylindrical blank forming means from said drive means to stop the operation thereof, said means for selectively disconnecting including means for connecting said cylindrical blank forming means to said drive means so as to retain synchronism between said cylindrical blank forming means and said mandrel movement means.

4,453,999

DEVICE FOR INTERMITTENTLY TRANSPORTING A TAPE PROVIDED WITH CONTROL RECESSES AT REGULARLY SPACED INTERVALS

Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Apr. 14, 1982, Ser. No. 368,313

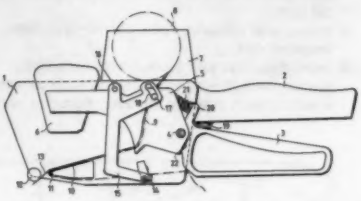
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115530

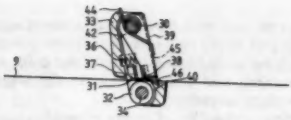
Int. Cl.[3] **B32B** *31/00, 31/04;* **B65H** *25/00;* **B41F** *1/08*

U.S. Cl. 156—361 **4 Claims**

1. In a device for intermittently transporting tape bearing adhesive labels in an apparatus for dispensing said adhesive labels and for applying same on articles where said tape is provided with control recesses at regularly spaced intervals along its length where said device includes a tape feeding member which includes (a) a tape claim through which the tape is passed where the clamp is movable forward and backward along the tape and (b) a control sensor including engaging means for intermittently engaging said recesses to feed said tape through the apparatus during the said backward movement of the clamp along the tape and where said tape clamp includes (a) a clamping member movable between a tape clamping position and a tape releasing position and (b) a counter-clamp member and where said control sensor senses the recesses in the tape and brings the clamping member into the tape clamping position when said engaging means of the control sensor drops into a control recess,

the improvement where the control sensor is movable relative to the clamping member so that (a), in response to the engaging means dropping into and positively engaging a control recess, the control sensor moves into contact with the clamping member and (b), in response to the control sensor engaging the clamping member, the clamping





member is moved from the tape releasing position into the tape clamping position to effect positive feed of the tape through the apparatus.

4,454,000

MOTORIZED TOOL FOR JOINING SELF ADHESIVE PLIES OF UNVULCANIZED RUBBER

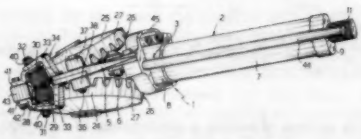
Robert Schlemmer, Rome, Italy, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 22, 1983, Ser. No. 525,361

Claims priority, application Italy, Mar. 21, 1983, 67313 A/83

Int. Cl.[3] **B32B** *31/20*

U.S. Cl. 156—502 **5 Claims**



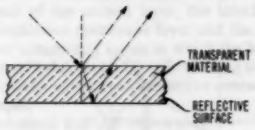
1. A motorized tool for joining self adhesive plies, particularly reinforced plies of uncured elastomeric material utilized in tire construction, the tool including first and second arms disposed adjacent one another, a pair of first rolling bodies rotatably mounted on the said first arm and disposed on opposite sides thereof; the said first rolling bodies converging towards one another and being in contact along a section substantially facing the said second arm; at least one pair of second rolling bodies carried rotatably by the said second arm in a position substantially facing the said first arm, and drive means for driving the said first rolling bodies about their axes, characterized by the fact that the said arms are pivoted together at an intermediate point to constitute a pincer structure, and resilient means are interposed between the said two arms to urge the said first and second rolling bodies into contact with one another; the said first rolling bodies comprising two discs having peripheral crowns of teeth meshing with one another along the said contact section, and the said drive means including an output pinion interposed between the said two discs and meshing with one of the said crowns of teeth.

4,454,001

INTERFEROMETRIC METHOD AND APPARATUS FOR MEASURING ETCH RATE AND FABRICATING DEVICES

Marek A. Sternheim, Livermore, Calif., and Willem van Gelder, Lehighton, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 27, 1982, Ser. No. 412,271
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00; C23F 1/02
U.S. Cl. 156—626 14 Claims



1. A method for fabricating a device, comprising the steps of:

etching a pattern into a substrate; and

monitoring said etching of said substrate by illuminating a region of said substrate with light and sensing a portion of the light reflected from said region, characterized in that

said region of said substrate is a region into which a portion of said pattern is being etched,

said sensing step includes the step of detecting the intensity of a diffraction order of the light reflected from said region, and

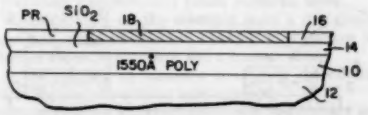
said method further comprises the step of terminating said etching based on the detected number of cycles of said intensity.

4,454,002

CONTROLLED THERMAL-OXIDATION THINNING OF POLYCRYSTALLINE SILICON

Kevin T. Hankins, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 19, 1983, Ser. No. 533,584
Int. Cl.³ H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—626 9 Claims



1. A method of fabricating a polysilicon fuse comprising:

depositing a layer of polycrystalline silicon on a substrate to have a thickness of greater than 1200 Angstroms;

oxidizing said polycrystalline layer to form a polycrystalline layer of a thickness below 1000 Angstroms with an oxide layer thereon;

removing said oxide layer over a measurement area of said polycrystalline layer; and

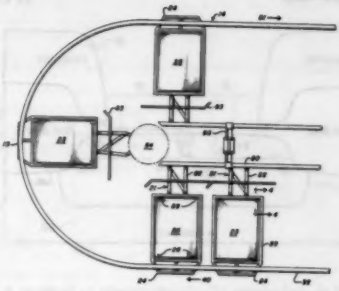
measuring the final thickness of said polycrystalline layer.

4,454,003

PRINTED CIRCUIT BOARD COMPONENT CONVEYOR APPARATUS AND PROCESS

Herbert Fishman, Newton Center, and Alvin J. Rogers, Brockton, both of Mass., assignors to Systems Engineering & Manufacturing Corp., Stoughton, Mass.

Filed Jan. 6, 1983, Ser. No. 455,956
Int. Cl.³ H01L 21/306; C23F 1/02
U.S. Cl. 156—640 14 Claims



1. A printed circuit board conveyor apparatus comprising a spray treatment line for moving a substantially planar circuit board component having first and second sides along a first path at a first level from a starting point to a distant point and then back at a second level in a second path toward said starting point,

said apparatus comprising a frame means for mounting said circuit board component for movement away from said starting point along said first path to said distant point,

liquid spray means positioned on either side of said path at said first level for uniformly spraying said circuit board sides with liquid to carry out a printed circuit processing step,

conveyor guide means for contacting said frame means in supporting relationship therewith to maintain a predetermined position of said frame and fixed position to said circuit board mounted thereon to aid in uniform application of liquids by said liquid spray means,

a conveyor drive means mounting said frame means for moving said circuit board in said first and second path at a first and second level respectively, with said second level being above said first level whereby said board can be returned to said starting point by said conveyor means.

10. In a method of manufacturing a printed circuit board components wherein circuit board components are treated seriatim in a plurality of spraying stations,

the improvement comprising,

mounting said substantially planar board components seriatim on a first conveyor on frame means for movement along a first path at a first level from a starting point to a distant point and for upward movement to a second path returning towards said starting point at a level raised above said first path,

fixing said components to a plurality of frames of said frame means by releasable means with said components held against sway from a vertical path by positive means at upper and lower portions of said components,

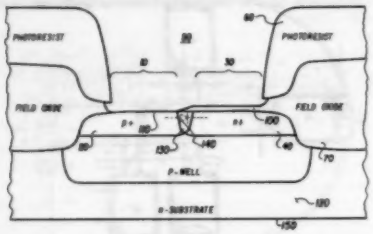
and advancing said components along said first and second path so that a single operator can operate said method with a high degree of precision with respect to spray treatments to the components at said path with little movement of said components except in the direction of said path.

4,454,004

UTILIZING CONTROLLED ILLUMINATION FOR CREATING OR REMOVING A CONDUCTIVE LAYER FROM A SiO_2 INSULATOR OVER A PN JUNCTION BEARING SEMICONDUCTOR

David E. Hackleman, Monmouth; Ralph H. Nielsen, Jr., and Marzio A. Leban, both of Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 28, 1983, Ser. No. 470,673
Int. Cl.³ H01L 21/306
U.S. Cl. 156—643 12 Claims



1. In a method for chemical etching with an aqueous acidic fluoride etching solution of a region of silicon dioxide over a semiconductor substrate having a P-N junction, the steps comprising:

controlling illumination by light of the semiconductor substrate by substantially excluding light from the region of silicon dioxide being etched during a time just prior to the chemical etching of the region of silicon dioxide; and

etching the region of silicon dioxide while continuing to substantially exclude light from the region of silicon dioxide being etched.

4,454,005

METHOD OF INCREASING INTERFIBER BONDING AMONG FIBERS OF LIGNOCELLULOSIC MATERIAL, AND RESULTANT PRODUCT

Jan Stofko, St. Charles, Ill., and Eugene Zavarin, San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 13,279, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 566,996, Apr. 10, 1975, abandoned. This application Jul. 26, 1979, Ser. No. 60,964
Int. Cl.³ D21H 3/66
U.S. Cl. 162—12 4 Claims

1. The method of increasing interfiber bonding among fibers of defiberized lignocellulosic material containing a substantial proportion of the natural lignin content which comprises dispersing substantially throughout a sheet of such material a nitrate and applying heat and pressure to said sheet for a time and temperature sufficient to effect said bonding by oxidative bonding reaction.

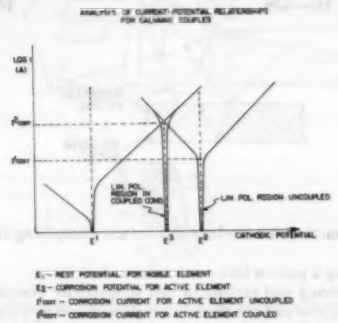
3. The method of increasing interfiber bonding among fibers of defiberized lignocellulosic material containing a substantial proportion of the natural lignin content which comprises dispersing substantially throughout a sheet of such material a chlorate and applying heat and pressure to said sheet for a time and temperature sufficient to effect said bonding by oxidative bonding reaction.

4,454,006

METHOD AND APPARATUS FOR MEASURING TOTAL CORROSION RATE

Rudolf H. Hausler, DesPeres; Allen L. Savage, St. Louis, both of Mo., and Jack B. Harrell, Jr., Friendswood, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 23, 1982, Ser. No. 401,165
Int. Cl.³ G01N 27/46
U.S. Cl. 204—1 T 5 Claims



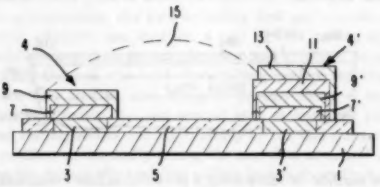
1. A probe for use in measuring total corrosion rate comprising a galvanically coupled test electrode comprising two metallic structures, said structures differing from each other in composition, and being mechanically and electrically connected to each other by conductive means and fluid tight sealing means positioned between said structures at the opposite ends of said test electrode, a second rod-shaped electrode serving as a reference electrode, a third rod-shaped electrode serving as an auxiliary electrode, all said electrodes being substantially dimensionally identical; holding means for holding said electrodes parallel to and in proximity with each other and extending outwardly from said holding means; fluid-tight sealing means between each of said electrodes and said holding means; electrical terminal means on said holding means; and conductive means in said holding means for electrically connecting each of said electrodes to a respective terminal in said terminal means.

4,454,007

ION-SELECTIVE LAYERED SENSOR AND METHODS OF MAKING AND USING THE SAME

Salvatore J. Pace, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 27, 1983, Ser. No. 461,479
Int. Cl.³ G01N 27/46
U.S. Cl. 204—1 T 22 Claims



1. A sensor for the potentiometric measurement of an ion in a liquid sample, comprising:

a dimensionally stable, chemically inert, electrically insulating, substantially planar substrate layer having disposed thereon a sensing half-cell and a reference half-cell.

the sensing half-cell comprising:

(a) a terminated layer of electroconductive material in intimate contact with the substrate layer, the electroconductivity being at least 1×10^{2} (ohm-cm)$^{-1}$, the electroconductive material layer having coated thereon

(b) a carbon layer of finely divided particles of carbon uniformly dispersed in a matrix of organic polymeric binder having coated thereon

(c) an ion-selective membrane layer comprising an ionophoric material dispersed in a matrix of dielectric organic polymer, the layer having an electrical impedance at least two orders of magnitude greater than the impedance of the carbon layer, the interface between the ion-selective membrane layer and the dispersed carbon layer comprising a zone in which the layers are partially interdiffused, layers (a) and (b) being shielded from both chemical and electroconductive contact with the liquid sample;

the reference half-cell comprising:

(a) a terminated layer of electroconductive material in intimate contact with the substrate layer, the electroconductivity being at least 1×10^{2} (ohm-cm)$^{-1}$, the electroconductive material layer having coated thereon

(b) a carbon layer of finely divided particles of carbon uniformly dispersed in a matrix of organic polymeric binder having coated thereon

(c) an ion-selective membrane layer comprising an ionophoric material dispersed in a matrix of dielectric organic polymer, the layer having an electrical impedance at least two orders of magnitude greater than the impedance of the carbon layer, the interface between the ion-selective membrane layer and the dispersed carbon layer comprising a zone in which the layers are partially interdiffused, layers (a) and (b) being shielded from both chemical and electroconductive sample, the ion-selective membrane having coated thereon

(d) a salt bridge layer comprising a predetermined concentration of an ion capable of interacting with the ionophoric material, the ion being dissolved in a solid hydrophilic polymer, the salt bridge layer being substantially, but incompletely, shielded from ionic contact with the liquid sample by an overlying layer of an inert liquid-impermeable electrically insulating layer to define a shielded and an unshielded surface area of the salt bridge layer.

the sensing half-cell and the reference half-cell being spaced apart on the substrate layer to define a liquid sample receiving zone adapted to allow the liquid sample to make ionic contact with both the ion-selective membrane layer of the sensing half-cell and the unshielded surface area of the salt bridge layer of the reference half-cell, such that application of the liquid sample to the sensor does not substantially change the predetermined ion concentration in the salt bridge layer of the reference half-cell thereby establishing a stable reference potential.

11. A method of making a multi-laminate electrode half-cell of the type defined in claim **1**, comprising:

(a) preparing a substantially planar substrate layer,

(b) screen-printing on the substrate layer a thin layer of a paste of electroconductive material in a pattern which defines a conductive path and a contact area,

(c) screen-printing an insulator layer over the conductive path, leaving the contact area exposed,

(d) screen-printing a carbon layer over the contact area of the electroconductive material, and

(e) screen-printing an ion-selective membrane over the carbon layer.

12. A method for measuring the concentration of an ion contained in a liquid sample comprising (1) placing a quantity of sample in the receiving zone of the sensor of claim **1** by which an ion transport path is completed between the ion-selective membrane layer of the sensing half-cell and the salt bridge layer of the reference half-cell, and (2) measuring the potential between the conductive layers of the half-cells at a current flow of less than 1×10^{-12} amperes.

4,454,008

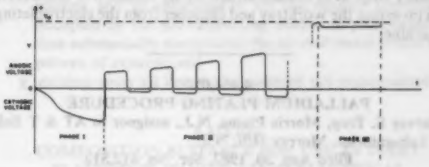
ELECTROCHEMICAL METHOD FOR PRODUCING A PASSIVATED JUNCTION IN ALLOY SEMICONDUCTORS

Juergen L. W. Pohlmann, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1983, Ser. No. 469,491

Int. Cl.^{3} **C25D** *11/32*

U.S. Cl. 204—15 **6 Claims**



1. A method of electrochemically producing, in the electrolyte of a electrolytic circuit having two electrodes, on at least one surface of at least a ternary semiconductor alloy layer with two of its components being cations and the other an anion, a passivated junction, including the steps of:

(a) connect the layer to one electrode of the electrolytic circuit;

(b) energize between the one electrode and the other electrode with an essentially square wave of current and an increasing square-wave modulated voltage, both said current and said voltage having cathodic phases of less amplitudes than their anodic phases, whereby the two cations of the layer migrate at different rates toward the one surface of the layer in response to the voltage, whereby one cation passes into the electrolyte at a greater rate than the other one, and whereby said anion forms an oxide on said one surface;

(c) remove the layer from the electrolyte;

(d) deenergize the electrodes;

(e) disconnect the layer from the one electrode; and wash, rinse, and dry the layer.

4,454,009

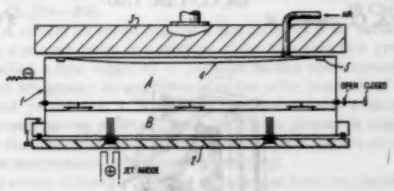
METHOD OF, AND A MACHINE FOR, ELECTROPLATING

John M. Cockeram, Spratton, England, and Herbert Wurmb, Nieder, Austria, assignors to S.G. Owen Limited, Northampton, England

Filed May 17, 1983, Ser. No. 495,160

Int. Cl.^{3} **C25D** *5/02, 17/06*

U.S. Cl. 204—15 **6 Claims**



1. In a method of selective electroplating, the improvement comprising the utilisation of a highly conductive electrolyte, compatible with the plating electrolyte but containing no depositable metallic ions, to form the cathode connection to

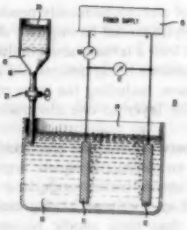
the components to be plated, said improvement comprising mounting the components in a worktray, placing the worktray over a chamber containing or intended to contain the said highly conductive electrolyte, placing the inverted worktray in a plating machine and electroplating the said components, the cathode connection to the said components being effected through the said highly conductive electrolyte in the chamber on the opposite side of the worktray from the plating anodes of the plating machine; said chamber comprising a two-part chamber, the lower part of the chamber containing the highly conductive electrolyte during electroplating, the part of the chamber which is uppermost during electroplating being sufficiently large as to contain all the highly conductive electrolyte on inverting the worktray and chamber from the electroplating machine.

4,454,010

PALLADIUM PLATING PROCEDURE

Harvey S. Trop, Morris Plains, N.J., assignor to AT & T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 30, 1982, Ser. No. 412,512
Int. Cl.³ C25D *3/52*
U.S. Cl. 204—47 **22 Claims**



1. A process for electroplating a metallic substance on a surface, said metallic substance comprising palladium, comprising the step of passing current through a cathode, an electroplating bath and an anode with a cathode potential great enough to electroplate palladium, said electroplating bath having a pH between 7.5 and 13.5, a conductivity greater than 10^{-3} mho-cm and said electroplating bath comprising a source of palladium characterized in that at least part of the source of palladium is added as palladium-1,3-diaminopropanedichloride.

4,454,011

ELECTRO ORGANIC METHOD AND APPARATUS FOR CARRYING OUT SAME

Malcolm Korach, Akron, and Stanley R. Pickens, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1983, Ser. No. 478,939
Int. Cl.³ C25C *1/00*
U.S. Cl. 204—59 R **5 Claims**

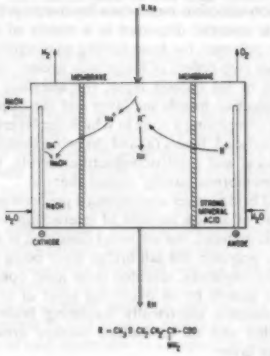
1. A method of electrolytically forming a carboxylic acid in an electrolytic cell having an anode, a cathode, and a solid electrolyte therebetween, wherein at least one of said electrodes is in contact with an external surface of the solid electrolyte or a porous, non-electrode layer on such an external surface which method comprises providing CO_2 and a reducible organic compound in contact with the cathode, passing an electrical current from the anode to the cathode, and evolving the carboxylic acid at the cathode.

4,454,012

PROCESS FOR THE PREPARATION OF METHIONINE

Jean Bachot, Fontenay-aux-Roses, and Jean Grosbois, L'Isle-Adam, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 234,498, Feb. 17, 1981, abandoned. This application Apr. 21, 1983, Ser. No. 487,075
Claims priority, application France, Feb. 19, 1980, 80 03581
Int. Cl.³ C25B *3/00, 7/00*
U.S. Cl. 204—72 **3 Claims**



1. Process for the continuous preparation of crystalline methionine from a solution containing an alkali metal methioninate and an alkali metal carbonate, which comprises:

continuously feeding an aqueous solution containing said alkali metal methioninate and either an alkali metal carbonate, or both an alkali metal carbonate and a support electrolyte which is a highly dissociated mineral salt which is very soluble in the medium and which has a high conductivity, to the intermediate compartment of a cell comprising an intermediate compartment and anode and cathode compartments each separated from said intermediate compartment by a cationic membrane;

electrolysing at 75° to 95° C. said aqueous solution, so that hydrogen ions generated in the anode compartment migrate to the intermediate compartment and, in a part of the intermediate compartment through which the electric current substantially does not pass, displace the alkali metal ions of said methioninate to form methionine and also convert the carbonate ions into carbon dioxide, and the alkali metal ions migrate from the intermediate compartment to the cathode compartment to form an alkali metal hydroxide therein;

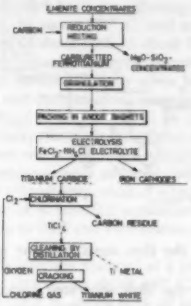
continuously withdrawing electrolysed aqueous solution from said intermediate compartment; and

cooling said electrolysed solution to cause methionine to crystallize out, and recovering the crystalline methionine so obtained, and also recovering alkali metal hydroxide from said cathode compartment.

4,454,013
METHOD OF SEPARATING IRON AND ITS ALLOY METALS FROM FINE-GRAINED CRUDE OXIDIC PRODUCTS

Sune Eriksson, Hofors, and Gotthard Björling, Djursholm, both of Sweden, assignors to SKF Steel Engineering AB, Sweden

Filed May 23, 1983, Ser. No. 496,813
Claims priority, application Sweden, May 28, 1982, 8203320
Int. Cl.³ C25C 1/06
U.S. Cl. 204—112 8 Claims



1. A method of separating iron and at least one ferro-alloy metal from fine-grained oxidic material comprising the steps of:

(a) injecting said material into a furnace together with carbon powder and a reducing gas and supplying heat to the furnace by means of a plasma generator so as to bind at least a portion of the alloy metal as carbide;

(b) removing said carbided ferro-alloy metal and said iron from the furnace as a melt;

(c) solidifying and granulating said carbided ferro-alloy metal and iron and placing said granulated ferro-alloy metal and iron in an electrolytic cell as an anode in an electrolytic solution;

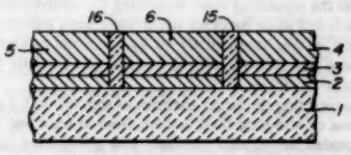
(d) passing an electric current between the anode and a cathode in the electrolyte solution such that iron is liberated from the anode and iron is precipitated at the cathode, thereby causing substantially all of the iron at the anode to be liberated leaving a residue of carbided ferro-alloy metal at said anode; and

(e) separately removing said residue at the anode and said iron at the cathode thereby separating said iron from said ferro-alloy metal.

4,454,014
ETCHED ARTICLE

Peter G. Bischoff, Cupertino, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Continuation of Ser. No. 212,359, Dec. 3, 1980. This application Jan. 3, 1983, Ser. No. 455,367
Int. Cl.³ C23C 15/00; C25F 3/00, 5/00
U.S. Cl. 204—129.65 58 Claims



1. A method for fabricating a metallic pattern on a substrate comprising the steps of:

a. depositing a first thin metallic layer on an inert substrate;

b. depositing a very narrow self-supporting border of a given height of photoresist material on such metallic layer, said border outlining the configuration of a pattern of interest of a subsequent second metal to be deposited on said thin metallic layer, said subsequent second metal becoming anodic with said first metallic layer during its etching;

c. depositing said second metal on said first metal,

d. removing said self-supporting border of photoresist exposing said first thin metallic layer;

e. removing said first thin metallic layer in those areas exposed in step d;

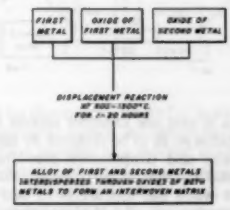
f. depositing photoresist to substantially cover the pattern of interest and to substantially fill the regions previously occupied by the self-supporting border of photoresist to thus substantially encapsulate the second metal within the pattern of interest; and

g. etching away all the anodic material not encapsulated.

4,454,015
COMPOSITION SUITABLE FOR USE AS INERT ELECTRODE HAVING GOOD ELECTRICAL CONDUCTIVITY AND MECHANICAL PROPERTIES

Siba P. Ray, Plum Boro, Pa., and Robert A. Rapp, Columbus, Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 27, 1982, Ser. No. 423,673
Int. Cl.³ C25C 3/00; C25B 11/04
U.S. Cl. 204—293 36 Claims


FIRST METAL
OXIDE OF FIRST METAL
OXIDE OF SECOND METAL
DISPLACEMENT REACTION
ALLOY OF FIRST AND SECOND METALS INTERDISPERSED THROUGH OXIDES OF BOTH METALS TO FORM AN INTERWOVEN MATRIX

11. An inert electrode suitable for use in the production of metal by the electrolytic reduction of a metal compound dissolved in a molten salt, said electrode comprising a composition comprising an interwoven network of at least one nickel-iron oxide with a nickel-iron alloy dispersed therethrough.

4,454,016
REMOVAL OF PCB FROM OIL AND OTHER LIQUIDS

Mario Rabinowitz, Redwood City; Narain G. Hingorani, Los Altos Hills, and E. Robert Perry, Portola Valley, all of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 13, 1981, Ser. No. 310,518
Int. Cl.³ B03C 5/02; C10G 33/02
U.S. Cl. 204—308 10 Claims

1. A system for separating out a first group of polar particles from a second group in a mixture of the two, said first group including a first subgroup of particles having polar moments which are greater in magnitude than the polar moments of the second particles at a first given temperature and a second subgroup having polar moments which are greater in magnitude than the polar moments of the second particles at a second given temperature, said system comprising:

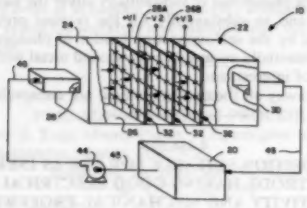
(a) means defining a chamber including at least one chamber section containing spaced-apart electrode means;

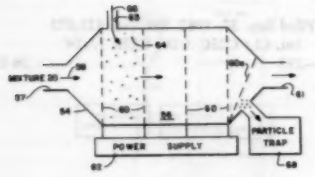
(b) particle collecting means carried by said electrode means and displaying an affinity for said first particles sufficient to retain them when these particles are in contact with the collecting means;

(c) means cooperating with the spaced-apart electrode means in each chamber section for applying a non-uniform electric field therebetween;

(d) means for placing said mixture of particles in each chamber section between adjacent electrode means therein whereby to subject said mixture to said non-uniform electric field; and

(e) temperature providing means for providing said mixture of particles at said first given temperature when the mixture is in one of said chamber sections whereby said first subgroup of said first particles are attracted to the elec-





trode means in said one chamber section faster than the second particles so as to be retained by said particle collecting means, said temperature providing means also providing said mixture of particles at said second given temperature when the mixture is in said one chamber section or another one of said chamber sections, at a different time, whereby said second subgroup of said first particles is attracted to the electrode means in said one or another chamber section faster than the second particles so as to be retained by the particle collecting means carried by the last-mentioned electrode means.

4,454,017

PROCESS FOR RECOVERING HYDROCARBON AND OTHER VALUES FROM SHALE OIL ROCK

Rollan Swanson, c/o Chemroil Enterprises, Inc., 100 Wall St., New York, N.Y. 10005

Continuation-in-part of Ser. No. 242,305, Mar. 20, 1981, which is a continuation-in-part of Ser. No. 220,021, Jan. 5, 1981, Pat. No. 4,366,044, and Ser. No. 140,604, Apr. 15, 1980, said Ser. No. 220,021, is a continuation-in-part of Ser. No. 114,207, Jan. 22, 1980, abandoned, and Ser. No. 63,824, Aug. 6, 1979, abandoned.

This application Feb. 1, 1982, Ser. No. 343,956

Int. Cl.[3] C10G *1/02*; C10B *53/06*

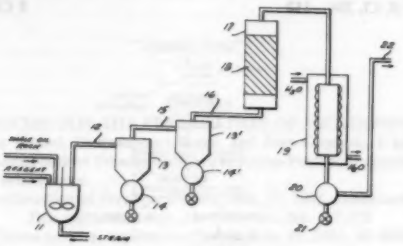
U.S. Cl. 208—11 R **27 Claims**

1. In a process for recovering hydrocarbon values from shale oil rock is a western U.S. shale oil rock, the improvement comprising:

(a) reacting at a temperature up to about 560° C. in at least one reaction zone shale oil rock and a reagent of an alkali metal hydrosulfide, sulfide, polysulfide or a hydrate of same or mixtures of same, in presence of water, at a pressure from subatmospheric to 10 atm., whereby said reagent and water upon reacting with rock constituents containing hydrocarbon values shatter said rock into fine particulate gangue;

(b) separating the hydrocarbon values and a shale oil rock fine particulate gangue from the unreacted portion of said shale oil rock by removal in a flow stream of said particulates, hydrocarbon values and water in form of steam;

(c) further separating the fine particulate gangue from said hydrocarbn values while said hydrocarbon values and steam are in vaporous and/or gaseous form in at least one gas and fine particulate separation zone;



(d) recovering the thus separated fine particulate gangue, and

(e) recovering the thus separated hydrocarbon values as either gaseous or liquid hydrocarbon values by cooling and/or condensation.

4,454,018

SIMULTANEOUS CRUSHING AND RETORTING OF OIL SHALE WITH FLUID JETS

Valadi N. Venkatesan, Dallas, and Lawrence R. Stowe, Plano, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,794

Int. Cl.[3] C10G *1/02*

U.S. Cl. 208—11 R **19 Claims**

1. A process for recovery of hydrocarbon products from oil bearing shale, including simultaneous retorting and pulverizing of the oil shale, comprising:

(a) feeding crushed oil shale into a retorting and pulverizing zone;

(b) simultaneously retorting and pulverizing the shale of step (a) with fluids heated to a temperature suitable for retorting from at least two opposed fluid jets to pulverize the shale and release hydrocarbon products;

(c) transporting the shale, hydrocarbon products and fluids of step (b) away from the retorting and pulverizing zone to a separating zone above said retorting and pulverizing zone;

(d) in the separating zone, separating the hydrocarbon products and shale particles which have been pulverized to a size so that substantially all hydrocarbon products have been removed therefrom, from larger, partially retorted shale particles;

(e) contacting the larger particles of step (d) with a combustion or stripping fluid emitted from at least one fluid jet located above said retorting and pulverizing zone and recycling the larger particles to the retorting and pulverizing zone after the contacting; and

(f) collecting the hydrocarbon products.

4,454,019
PROCESS FOR PRODUCING OPTICALLY ANISOTROPIC CARBONACEOUS PITCH

Takayuki Izumi, Ohi; Tsutomu Naito, Iruma; Tomoo Nakamura, Sakado, and Hisao Tanaka, Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1982, Ser. No. 338,590
Int. Cl.³ C10C *3/00*; D01F *9/12, 9/20*
U.S. Cl. 208—22 38 Claims

1. A process for producing a homogeneous, optically anisotropic carbonaceous pitch having a softening point in the range from about 230° C. to about 320° C. and an optically anisotropic phase content of about 90% to about 100% comprising:

providing a carbonaceous material selected from oils and tars capable of forming a pitch when heated at elevated temperatures, said carbonaceous material having a boiling point in the range of about 250° C. to about 540° C. and being substantially free of chloroform and of n-heptane insoluble matter and containing a n-heptane-soluble material, said n-heptane-soluble material consisting essentially of an aromatic oil and resin, each of which has an aromatic carbon fraction of at least 0.6, a number-average molecular weight of up to 1000 and a maximum molecular weight of up to 2000;

heating said carbonaceous material at a temperature in the range of about 380° C. to about 440° C. for a time sufficient to about 20% to about 80% of an optically anisotropic phase;

maintaining said heated carbonaceous material at a temperature in the range from about 360° C. to about 380° C. for a time sufficient to form two layers, an upper layer containing a relatively low optically anisotropic phase content and a lower layer containing relatively high optically anisotropic phase content;

separating said lower layer from said upper layer;

thereafter heating said separated lower layer at a temperature in the range of 380° C. to about 440° C. for a time sufficient to increase the optically anisotropic phase content of said lower layer to at least 90% whereby a homogeneous optically anisotrophic carbonaceous pitch having a softening point in the range of about 230° C. to about 320° C. and an optically anisotropic phase content of about 90% to about 100% is obtained.

4,454,020
PROCESS FOR PRODUCING A HOMOGENEOUS LOW SOFTENING POINT, OPTICALLY ANISOTROPIC PITCH

Takayuki Izumi; Tsutomu Naito, both of Iruma, and Seikoh Igarashi, Chiyoda, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,618
Claims priority, application Japan, Feb. 22, 1982, 57-27126
Int. Cl.³ C01C *3/00*; D01F *9/12, 9/20*
U.S. Cl. 208—22 15 Claims

1. A homogeneous, low softening point, optically anisotropic pitch containing approximately 80% or more of an optically anisotropic phase and a softening point of approximately 320° C. or below, said pitch prepared by:

(1) providing a pitch-like material comprising a mixture of compounds consisting of carbon and hydrogen and having an approximate boiling point of 540° C. or higher, said mixture being substantially free from quinoline insolubles, said mixture containing a first component soluble in n-heptane and a second component insoluble in n-heptane and soluble in benzene, each aromatic carbon fraction of such components being about 0.7 or higher, each number average molecular weight being about 1,500 or less, and each maximum molecular weight being approximately 10,000 or less;

(2) heating said pitch-like material at temperatures in the range of from about 380° C. to about 440° C. for a time sufficient to form about 20% to about 70% of an optically anisotropic phase;

(3) maintaining said heated pitch-like material at temperatures in the range of from about 350° C. to about 400° C. for a time sufficient for said heated pitch material to form an upper layer and a lower layer;

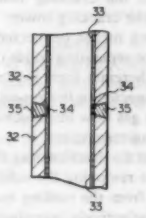
(4) separating said lower layer from said upper layer; and

(5) heating said lower layer at a temperature in the range of from about 380° C. to about 440° C. for a time sufficient to increase the optical anisotropic phase content of said separated lower layer to 80% or more.

4,454,021
METHOD FOR THERMAL CRACKING OF HYDROCARBONS IN AN APPARATUS OF AN ALLOY HAVING ALKALI OR ALKALINE EARTH METALS IN THE ALLOY TO MINIMIZE COKE DEPOSITION

Yoji Watanabe, Oita; Toshio Morimura, Kawaguchi, and Yukio Toyoda, Oita, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,782
Int. Cl.³ C10G *9/12*
U.S. Cl. 208—48 R 18 Claims

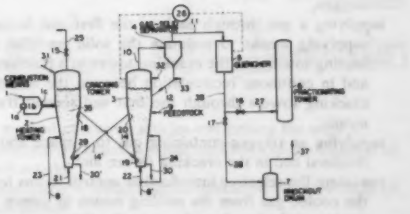


1. A method for thermal cracking of or heating of hydrocarbons while suppressing carbon deposition on the surface of a heat-resistant alloy member of a thermal cracking or heating apparatus, characterized in that at least one element selected from the group consisting of an alkali metal, an alkaline earth metal, an alkali metal-oxide and an alkaline earth metal-oxide is incorporated, as a solid solution or dispersed phases, into at least part of said heat-resistant alloy member where carbon deposition occurs, thereby effectively suppressing the carbon deposition.

4,454,022
DECOKING METHOD

Yoshihiko Shoji, Kamisu; Norio Kaneko, and Kazuo Kimura, both of Ibaraki, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,235
Claims priority, application Japan, Nov. 18, 1981, 56-183846
Int. Cl.³ C10G *9/16*
U.S. Cl. 208—48 R 3 Claims



1. A method of removing coke deposited within the gas passages of a dual-tower fluidized bed-type apparatus for thermally cracking hydrocarbons, said apparatus including:

heating and cracking towers, each adapted for enclosing a bed of fluidized solid heat exchange particles of a combustible material;

means provided in each of the heating and cracking towers for supplying therethrough a gas to respective towers to maintain the solid particles contained therein in a fluidized state;

first and second transport means, each extending between the heating and cracking towers such that the fluidized particles are in continuous recirculation between said towers, successively up the heating tower, down the first transport means, up the cracking tower and down the second transport means;

a discharge conduit means opening into the top of the heating tower for discharging a controlled amount of the gas in the heating tower therethrough;

a combustion means for heating a gas and having a combustion gas discharge port connected to the heating tower for heating with the combustion gas the fluidized solid particles in the heating tower;

means connected to the cracking tower for feeding the hydrocarbons to the cracking tower;

a gas-solid separating means connected to the top of the cracking tower for separating solids contained in the gas flow introduced thereinto from the cracking tower;

a cooling means connected to the gas-solid separating means for quenching the gas flow introduced thereinto from the gas-solid separating means;

a fractionating tower for fractionating the cooled gas;

a knockout drum for removing the solid particles entrained in the cooled gas from the cooling means; and

control means for selectively introducing the cooled gas from the cooling means into either the fractionating tower or the knockout drum;

whereby the hydrocarbons supplied to the cracking tower through the hydrocarbon feed means are cracked by contact with a bed of heated, fluidized solid particles to form a gas product, the solid particles being introduced into the heating tower through the second transport means and heat-regenerated therein by contact with the combustion gas from the combustion means, the heated solid particles being recycled to the cracking tower through the first transport means for the utilization of their heat for effecting the cracking, said gas product being discharged from the cracking tower and passed successively through the gas-solid separating means, cooling means and fractionating tower, and wherein the gas passages in and upstream of the cooling means occasionally have to be cleaned of coke deposited therein; said method comprising:

stopping the feed of the hydrocarbons to the cracking tower;

operating the combustion means to heat the solid particles in the heating tower, the combustion means being operated so that the resulting combustion gas is substantially free of oxygen;

supplying a gas through each of the first and second gas supplying means to maintain the solid particles in the heating tower and the cracking tower in a fluidized state and in continous recirculation between the heating and cracking towers through the first and second transport means;

supplying an oxygen-containing gas to a space above the fluidized bed in the cracking tower; and

operating the selective introduction control means to allow the cooled gas from the cooling means to stream exclusively into the knockout drum, so that the oxygen-containing gas introduced into the cracking tower is allowed to pass through the gas passages and flow into the knockout drum, whereby the coke deposited within the gas passages is decomposed by combustion.

4,454,023

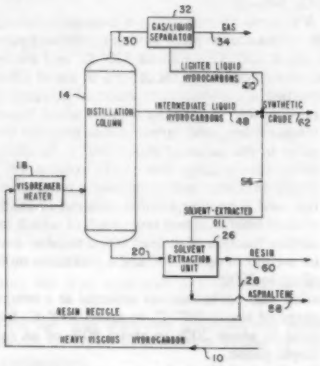
PROCESS FOR UPGRADING A HEAVY VISCOUS HYDROCARBON

Irvin H. Lutz, Sagamore Hills, Ohio, assignor to Alberta Oil Sands Technology & Research Authority, Edmonton, Canada

Filed Mar. 23, 1983, Ser. No. 477,948

Int. Cl.³ C10G *67/04, 21/00*

U.S. Cl. 208—96 **21 Claims**



1. In an improved process for upgrading heavy viscous hydrocarbons which includes visbreaking the heavy viscous hydrocarbons or portion thereof in a visbreaker heater with or without a soaking drum, fractionating the visbreaker heater output in a distillation step, and solvent processing a heavier fraction from the distillation step in a solvent extraction step to form two or more fractions including a heavier fraction containing a large percentage of asphaltenes and one or more lighter fractions containing a large percentage of resins and oils; the improvement comprising the steps of combining at least a portion of one of the lighter fractions which contains resins from the solvent extraction step with the heavy viscous hydrocarbons which are to be subject to visbreaking whereby the resin content thereof is increased, and withdrawing lighter fractions from the process to form one or more upgraded products.

4,454,024

HYDROCONVERSION PROCESS

Gopal H. Singhal, Houston, Tex., and Gordon F. Stuntz, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 1, 1982, Ser. No. 438,407

Int. Cl.³ C10G *45/30, 47/34*

U.S. Cl. 208—111 **9 Claims**

1. A slurry hydroconversion process which comprises:

(a) contacting a mixture comprising a hydrocarbonaceous feed having constituents boiling above 1050° F., a hydrogen-donor diluent and a catalyst with a molecular hydrogen-containing gas at hydroconversion conditions, including a hydrogen partial pressure ranging from 500 to 5000 psig, said catalyst comprising a metal contaminated, at least partially deactivated zeolitic cracking catalyst comprising a metal contaminant selected from the group consisting of vanadium, nickel, iron, copper and mixtures thereof, said catalyst comprising said metal contaminant in an amount ranging from about 0.2 to about 20 weight percent, based on said catalyst, and

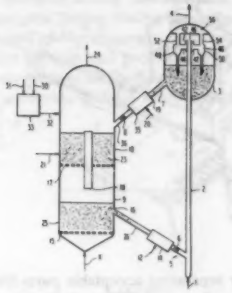
(b) recovering a hydroconverted oil product.

4,454,025

PASSIVATING HEAVY METALS IN CARBO-METALLIC OIL CONVERSION

William P. Hettinger, Jr., Russell, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 13, 1981, Ser. No. 263,395
Int. Cl.[3] C10G 11/18
U.S. Cl. 208—120 15 Claims



1. In a process for catalytically converting carbo-metallic containing residual oil feeds to produce transportation grade fuels comprising gasoline boiling range material whereby coke and metal contaminants of nickel and vanadium are deposited on the catalyst particles and the catalyst particles are regenerated by burning coke deposits in a catalyst regeneration operation, the improved method of operation for reducing coke and gas make during said catalytic conversion of said residual oil feeds and passivating within a 24-hour period an accumulation of nickel equivalent of heavy metals within the range of 3000 to 10,000 ppm on the cracking catalyst which comprises, adding a sufficient amount of an aluminum and/or silicon compound to said catalyst comprising greater than 3000 ppm nickel equivalents within said 24-hour period to passivate metal contaminants and provide at least a 1:1 ratio between said added aluminum and/or silicon compound and said accumulated heavy metals nickel equivalent contaminants and thereafter reducing the rate of addition of the added metal compound to said catalyst to provide a weight ratio relative to the nickel equivalent of heavy metals in the residual oil feed within the range of 1.5 to 4.

4,454,026

HYDROTREATING CATALYST AND PROCESS

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 274,500, Jun. 17, 1981. This application Jun. 11, 1982, Ser. No. 387,332
Int. Cl.[3] C10G 45/04, 49/04
U.S. Cl. 208—251 H 8 Claims

1. A process for hydrotreating hydrocarbon feeds comprising contacting a hydrocarbon feed with hydrogen under hydrotreating conditions in the presence of a catalyst composition comprising a hydrogenating component and a support comprising at least one porous refractory inorganic oxide, said catalyst having a BET surface area of 150 to about 190 m^2/g, bulk density of at least about 0.2 g/cc, total pore volume equal to the sum of micropore volume determined by nitrogen desorption in micropores having radii up to 600 Å and macropore volume determined by mercury penetration in macropores having radii of 600 to 25,000 Å of at least 0.9 cc/g, with at least 0.1 cc/g of macropore volume, such surface area, pore size distribution and total pore volume being effective to provide an average pore diameter of at least 230 Å calculated as 4 V/A, wherein at least 0.7 cc/g of the micropore volume is concentrated in pores having radii of 50 to 600 Å, wherein the micropore volume in pores having radii of 50 to 600 Å is distributed such that about 15 to about 60% thereof is provided by pores having radii of 50 to 100 Å and about 40 to about 85% thereof is provided by pores having radii of 100 to 600 Å, and wherein the micropore volume in pores having radii less than 50 Å is less than about 0.15 cc/g.

4,454,027

ARSENIC REMOVAL METHOD

Donald M. Fenton, Anaheim, assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 16, 1982, Ser. No. 408,078
Int. Cl.[3] C10G 29/04
U.S. Cl. 208—253 10 Claims

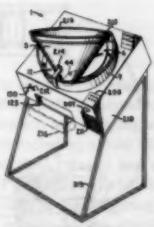
7. A method for removing arsenic from a substantially liquid hydrocarbon fluid which comprises reacting the fluid with spent oil shale, by passing the fluid through a bed of spent oil shale particles at a temperature between the freezing point of the fluid and about 400° C., and at a pressure between atmospheric pressure and about 4,000 p.s.i.a., and separating a fluid having a reduced arsenic content.

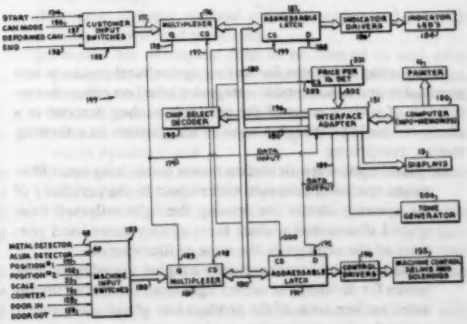
4,454,028

CAN SORTING METHOD AND APPARATUS

Robert R. Vetter, Westwood Hills, and John L. Aker, Shawnee, both of Kans., assignors to Point of Purchase Recycling, Inc., Kansas City, Mo.

Filed Jul. 30, 1982, Ser. No. 403,577
Int. Cl.[3] B07C 5/00; G07F 7/06
U.S. Cl. 209—548 33 Claims





1. A method of sorting articles comprising the steps of:
(a) generating a material signal indicative of the material of each article;
(b) generating a weight signal indicative of the weight of each article;
(c) in the absence of one of a selected material signal and a selected weight signal for an article, discharging said article to a reject location;
(d) in response to the combination of said selected material

signal and said selected weight signal for an article, discharging said article to an accept location; and

(e) counting the number of the accepted articles which are discharged to said accept location.

4,454,029

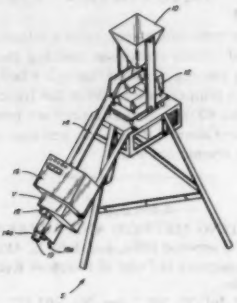
AGRICULTURAL PRODUCT SORTING

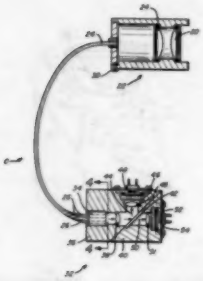
Elias H. Codding, Houston, Tex., assignor to Delta Technology Corporation, Houston, Tex.

Filed May 27, 1981, Ser. No. 267,596

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—581 **19 Claims**





1. A sorting apparatus for sorting agricultural products into acceptable and unacceptable categories based on color characteristics of surface areas of the products as they descend in a chute or conduit through a zone of illumination in a viewing station, comprising:

(a) plural optical sensor station means comprising optic fiber means spaced at intervals with respect to the periphery of the viewing station for sensing the light reflected from spaced illuminated surface areas of successive band portions of the product in the zone of illumination;

(b) optical divider means optically coupled to said optic fiber means for dividing the sensed light from the spaced illuminated surface areas of the product into plural color illumination level components;

(c) means for converting the plural color illumination level components of the sensed light into electrical component level signals;

(d) processing circuit means for comparing the component level signals with reference levels to determine if the color of the individual ones of the product is within acceptable limits; and

(e) ejector means for separating unacceptable ones of the product from those which are acceptable.

4,454,030

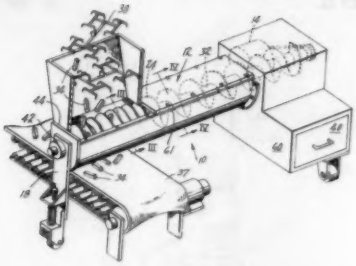
SPRUE SEPARATOR

James L. Young, Pascoag, R.I., assignor to Nelmor Company, Inc., North Uxbridge, Mass.

Filed Jun. 26, 1981, Ser. No. 277,900

Int. Cl.³ B07B *13/04*

U.S. Cl. 209—669 **4 Claims**



1. A sorter for separating acceptable parts from scrap and conveying parts and scrap in different directions to separate discharge areas, comprising a shaft, an auger assembly including a main flight fixed upon the shaft and extending the length of the auger, a trough having a semi-circular bottom disposed in generally concentric relationship with the auger and formed with an opening defining a parts discharge area, at least one auxilliary flight fixed to the shaft and extending along the auger a distance less than the length of the main flight and at least equal to the length of the discharge opening, a dam in the bottom of the trough at the edge of the discharge opening in the direction of scrap travel and means for imparting a rotary motion to the shaft.

4,454,031

OIL RESERVOIR, IN PARTICULAR FOR HYDRAULIC STEERING SYSTEMS

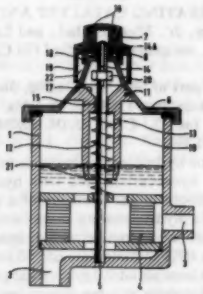
Rainer Schier, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG., Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,174

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141728

Int. Cl.³ B01D *35/00*

U.S. Cl. 210—86 **12 Claims**



1. A hydraulic steering system oil reservoir of the kind having a cup-shaped housing with an inlet pipe connection (2) and an outlet pipe connection (3) separated by a filter element (6) and also having a lid (11) secured to the housing by means of a bolt (5) secured to the bottom of the housing; wherein venting of the housing is effected through a protective pipe

(10) surrounding the bolt and movable thereon and of a length to extend into oil in the housing (8) including a vent cap (7) carried by the bolt into which the bolt protrudes:

wherein the improvement comprises:

an abutment element (20) carried on the bolt and effecting a limit stop for movement of the protective pipe on the bolt when the lid is removed from the housing, including a spring (12) effecting bias of said protective pipe towards said lid to effect sealing therebetween, said lid and said protective pipe having sealing means maintained in contiguity by said spring and sealing said housing against venting except through said protective pipe.

5. An oil reservoir as set forth in claim 1, wherein said protective pipe is provide with oil level indicator means (21).

4,454,032

FAST FILTERING APPARATUS

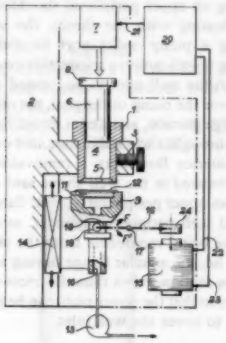
Yves Dupont, Lans-en-Vercors, and Christian Rocher, Jarrie, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 6, 1983, Ser. No. 501,487

Claims priority, application France, Jun. 16, 1982, 82 10498

Int. Cl.³ B01D *29/02*

U.S. Cl. 210—96.1 **4 Claims**



1. A fast filtering apparatus, particularly for biological liquids, wherein it comprises in combination:

an injection device equipped with a reservoir, whose bottom is sealed by a porous pellet and whose top is sealed by a piston displaceable in translation in the reservoir by any appropriate mechanical means, said reservoir containing the liquid phase to be filtered;

a filter supporting device comprising a chamber sealed in its upper part by a porous pellet serving as a support for the actual filtering material and connected by its base with pumping means making it possible to produce a vacuum in the chamber;

a device for ensuring the fast and temporary contacting of the injection device and the filter support device;

an electronic control means controlling each filtering operation, by simultaneously acting on the contacting device and on the mechanical translation means for the piston and accompanied by the bringing about, at the desired time, of the stoppage of the injection and the disengagement of the injection device and the filter support device.

4,454,033

FILTERING APPARATUS

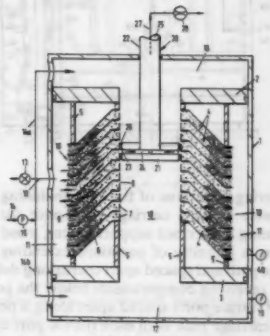
Norbertus Verduyn, Bankastraat 11, 3818 CG Amersfoort, Netherlands

Filed Sep. 21, 1982, Ser. No. 420,912

Claims priority, application Netherlands, Sep. 29, 1981, 8104453

Int. Cl.³ B01D *23/24*

U.S. Cl. 210—108 **6 Claims**



5. A fluid filtration device, comprising

(a) a plurality of filter cells arranged in a vertically stacked tubular configuration and defining an axial passage, each of said filter cells including a fluid inlet opening communicating with said axial passage and a filtered fluid outlet opening, each of said filter cells having a truncated conical configuration with the inlet opening of each of said cells being elevated relative to the associated outlet opening, respectively;

(b) mobile filtering material arranged within and partially filling each of said filter cells;

(c) means for delivering fluid to be filtered to said axial passage for introduction into said filter cell inlet openings, whereby said fluid flows radially outwardly through said filter cells and said outlet openings;

(d) filtrate drain means for receiving filtered fluid from said outlet openings; and

(e) drain element means for removing filtered material from said filter cells, said drain element means including

(1) a generally horizontal piston member arranged within said axial passage, said piston member including at least one radial passage terminating at a circumferential opening adapted for connection with at least one of said inlet openings; and

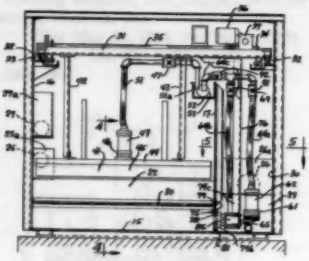
(2) an axially arranged piston rod connected with said piston member and containing a longitudinal passage communicating with said piston radial passage, said piston member being vertically displaced relative to said filter cells to connect said at least one piston circumferential opening with at least one of said inlet openings without interrupting the delivery of fluid to the remaining cell inlet openings, whereby filtered material may be removed from at least one of said filter cells while the remaining filter cells simultaneously filter the fluid.

4,454,034

FILTER APPARATUS

Gordon L. Astrom, Mount Morris, and Mark A. Herbig, Roscoe, both of Ill., assignors to Aqua-Aerobic Systems, Inc., Rockford, Ill.

Filed May 19, 1983, Ser. No. 496,092
Int. Cl.³ B01D *23/24*
U.S. Cl. 210—108 **6 Claims**



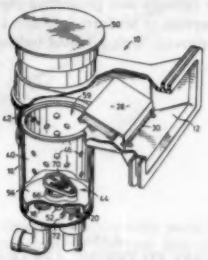
1. A filtering apparatus of the type including a tank, a carriage movable along a carriage path over the tank, porous means defining a filter bed support having a bed of filter material thereon, a plurality of partitions extending transverse to the carriage path and spaced apart therealong defining a plurality of fluid receiving compartments below the porous means, a plurality of filtrate ports spaced apart along a port locus paralleling said carriage path with each filtrate port communicating with a respective one of the fluid receiving compartments, a water inlet communicating with the tank above the bed of filter material, means for limiting the upper liquid level in the tank to a predetermined upper level below the top of the tank, a filtered fluid launder extending along said port locus and communicating with said filtrate ports, a filtered water outlet communicating with the filtrate launder, means controlling flow to the filtered water outlet for maintaining a minimum liquid level in the launder that is above the top of the bed of filter material and below said predetermined upper level in the tank, backwash means carried by said carriage and including a backwash pump and a backwash head movable along a path paralleling said port locus sequentially into juxtaposition with each of said filtrate ports to supply backwash fluid thereto, a waste water outlet, a waste water trough extending lengthwise of said tank and communicating with the waste water outlet, flow measuring notch type weir means associated with said apparatus for measuring flows at rates corresponding to a desired backwash rate and having an inlet side and a discharge side, a collector hood carried by said carriage for movement therewith along a path adjacent the upper surface of the bed, a waste water pump connected to the collector hood for pumping waste water therefrom, waste water conduit means connected to the waste water pump and having an outlet for delivering the waste water into said waste water trough, backwash conduit means for delivering fluid from the backwash pump to the backwash head, adjustable backwash flow control means in said backwash conduit means for adjusting the rate of flow of fluid therethrough from a backwash pump to the backwash head to the desired backwash rate, means including valve means connected to the backwash conduit means between said backwash flow control means and said backwash head for selectively shutting off flow from the backwash pump to the backwash head and for delivering flow from the backwash pump to the inlet side of the weir means for measurement of the rate of flow from the backwash pump through the backwash flow control means, adjustable waste water flow control means in the waste water conduit means for adjusting the rate of flow of fluid therethrough, and means for selectively shutting off flow of fluid from the waste water conduit means to the waste water outlet and for delivering fluid from the waste water conduit means to the inlet side of the weir means for measurement of the rate of flow of fluid from the waste water pump through the waste water flow control means.

4,454,035

POOL SKIMMER

Gunter Stefan, Toronto, Canada, assignor to Kafko Manufacturing Limited, Mississauga, Canada

Filed Jun. 25, 1982, Ser. No. 392,264
Int. Cl.³ E04H *3/20*
U.S. Cl. 210—117 **12 Claims**



1. A pool skimmer comprising: a skimmer body having means defining a throat adapted to communicate with the water surface of a pool for entry of pool water into the skimmer; said body having a removable lid for access to the interior thereof; said body also having a well located below the throat, the well having an upper peripheral shoulder defining a well inlet communicating with the throat, the well also having means defining a pump outlet port located in the bottom thereof forming a well outlet; a relocatable cover plate adapted to pass through the well inlet to be located at the bottom of said well to cover the pump outlet port, the cover plate having a peripheral edge portion, an interior liquid flow port for flow of liquid therethrough, and a valve mounted on the cover plate to close said interior flow port; a removable strainer basket adapted to be located in the well above said cover plate, said basket having an upper peripheral annular flange adapted to be located on said well peripheral shoulder, said strainer basket and cover plate being removable from the skimmer body by removing said lid, the annular flange having a central opening smaller in cross-sectional area than the cross-sectional area of the cover plate, so that the cover plate can be positioned on the annular flange to cover the well inlet.

4,454,036

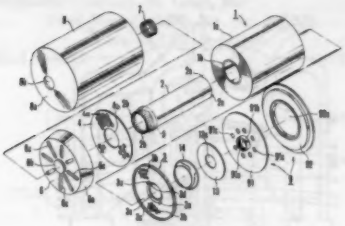
OIL FILTER

Shinichi Suzuki, Itabashi, Japan, assignor to Shinwa Ltd., Tokyo, Japan

PCT No. PCT/JP82/00243, 371 Date Sep. 7, 1982, 102(e) Date Sep. 7, 1982, PCT Pub. No. WO83/00024, PCT Pub. Date Jan. 6, 1983
PCT Filed Jun. 23, 1982, Ser. No. 417,112
Claims priority, application Japan, Jun. 23, 1981, 56-95940; May 10, 1982, 57-77744; May 10, 1982, 57-77745
Int. Cl.³ B01D *27/04*
U.S. Cl. 210—117 **19 Claims**

1. An oil filter of the type including a filter element formed by wrapping many times a sheet of thin filter paper about a core member, characterized in that there are provided a bottom cylindrical casing (**8**, **106**, **208**); a base member (**9**, **109**, **209**) closing an opened end of said casing and including an oil inlet port (**91***c*, **1091***c*, **2091***c*) and an oil exit port (**91***b*, **1091***b*, **2091***b*), and means for isolating first and second oil paths provided about the periphery of the filter element so as to communicate

one end and the periphery of the filter element with the first oil path (A) in communication with the oil inlet port and to com-



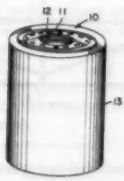
municate the other end of the filter element with the second oil path (B).

4,454,037

INSULATING JACKET FOR AN OIL FILTER

Ruth H. Conterio, and Eugene E. Conterio, both of 445 Highcrest Dr., Wilmette, Ill. 60091

Filed Sep. 24, 1982, Ser. No. 422,890
Int. Cl.³ B01D *27/00*
U.S. Cl. 210—120 **7 Claims**



1. An insulated jacket for an oil filter cartridge of a pressurized oil circulating system comprising,

(a) a one piece cylindrical cup-like shell formed from an insulating material freely enclosing the side and bottom of the oil filter cartridge,

(b) means provided by said shell adjacent its open end for sealing said open end when the cartridge is enclosed within said shell,

(c) means formed in the bottom of said shell through which air is expelled by the cartridge as it is telescopically received and moved internally of said shell and past said sealing means, and

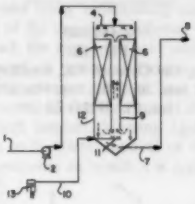
(d) means within said shell forming a closure for said means through which air is expelled with said closure means moved into a closed position with respect thereto by the inserted end of the cartridge enclosed within said shell establishing an insulated dead air space created by the expelled air between the inner wall surface of said shell and the enclosed cartridge.

4,454,038

APPARATUS FOR BIOLOGICAL TREATMENT OF WASTE WATER IN DOWNFLOW OPERATION

Chiaki Shimodaira, Kanagawa; Yoshinori Yushina, Tokyo; Hiroshi Kamata, Tokyo; Hideo Komatsu, Tokyo; Akinori Kurima, Kanagawa; Osamu Mabu, Kanagawa, and Yoshiharu Tanaka, Kanagawa, all of Japan, assignors to Chiyoda Chemical Engineering and Construction Co., Ltd., Yokohara, Japan

Division of Ser. No. 12,246, Feb. 14, 1979, Pat. No. 4,256,573. This application Oct. 31, 1980, Ser. No. 202,719
Claims priority, application Japan, Feb. 14, 1978, 53-15650
The portion of the term of this patent subsequent to May 17, 1998, has been disclaimed.
Int. Cl.³ C02F *3/08*
U.S. Cl. 210—150 **10 Claims**



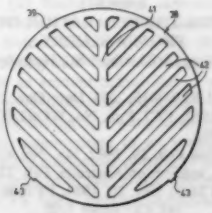
1. In an apparatus for continuous biological treatment of waste water including a reactor having a feeding pipe and a distribution pipe at the top thereof for introducing waste water into the reactor and a withdrawing pipe at the bottom thereof for removing treated water, and a particulate carrier having microbes attached thereto disposed within the reactor; the improvement wherein the carrier comprises particulate material having an apparent specific gravity smaller than the specific gravity of water, making it possible for said particulate material to float on water, whereby a substantially fluidized bed of said carrier is formed by the buoyancy of the particulate material in downflowing waste water to be treated.

4,454,039

FRAME AND COVER MEMBERS FOR CONSTRUCTING APERTURES IN ROAD SURFACES

Archibald H. R. McCoy, R.R. No. 1, Troy, Ontario, Canada

Filed Jul. 19, 1982, Ser. No. 399,435
Int. Cl.³ E02D *29/14*
U.S. Cl. 210—164 **7 Claims**



1. A catch basin comprising a one-piece cast metal frame member generally rectangular in plan and having a generally rectangular and planar upper face, side walls formed integrally with and extending downwardly from the sides of the upper face, a base portion comprising a flange formed integrally with and extending laterally outwardly from the lower portion of the side walls, a circular aperture in the upper face, an annular lip extending inwardly around the periphery of the aperture and off set downwardly from the upper face, the lip having its

upper side machined to form a smooth generally planar annular surface generally parallel to said upper face; and a circular catch basin grating fitting snugly within the aperture in the frame member and having an annular lower peripheral edge portion machined to form a smooth generally planar annular surface for seating on said machined lip upper annular surface, the grating comprising a one piece metal casting having an annular rim, a central bar coincident with a diameter of the rim and integrally joined at each end with said rim, and the grating being symmetrical about said diameter and having two sets of slots extending from the rim to the central bar, the slots in each set being parallel and inclining at the same angle from the rim toward one end of the bar and being defined between side bar members each of which is at one end integrally joined with said annular rim and at the opposite end is integrally joined with the central bar.

4,454,040

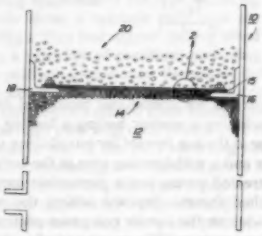
FILTER

Robert L. Roberts, 409 Concord Rd., Boothwyn, Pa. 19061

Filed Sep. 30, 1982, Ser. No. 430,883

Int. Cl.³ B01D *23/10*

U.S. Cl. 210—283 **7 Claims**



1. An upflow filter of the type in which influent is directed upwardly through buoyant filter media particles, characterized in that a porous supporting member including openings that are larger than the nominal size of the buoyant filter media particles is positioned above the media particles, and a layer of particulate material, having a nominal particle size greater than the openings through the supporting member, being supported on said member and including a plurality of interstices for permitting filtered influent to pass through it, said layer of particulate material retaining the buoyant filter media particles in the filter.

4,454,041

APPARATUS FOR THE SEPARATION OF PARTICLES FROM A SLURRY

Christopher G. Kelsey, 2/83 Albert St., Hornsby, Sydney, NSW 2077, Australia

PCT No. PCT/AU82/00015, 371 Date Oct. 22, 1982, 102(e) Date Oct. 22, 1982, PCT Pub. No. WO82/02842, PCT Pub. Date Sep. 2, 1982

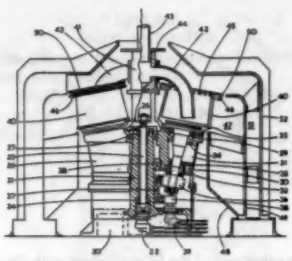
PCT Filed Feb. 19, 1982, Ser. No. 438,856

Claims priority, application Australia, Feb. 23, 1981, PE7704; Nov. 19, 1981, PF1621; Nov. 20, 1981, PF1639

Int. Cl.³ B04B *5/02*

U.S. Cl. 210—235 **13 Claims**

1. Apparatus for the separation of particles in a slurry according to their specific gravity by subjecting said particles to repetitive acceleration, said apparatus comprising at least one chamber including a side wall surrounding a first axis, said chamber being mounted for rotation about said first axis and said first axis being mounted for rotation about a second axis, means for introducing slurry to said chamber, means for extracting from said chamber a fraction adjacent said side wall in a region of the side wall remote from said second axis, means for rotating the chamber about said first axis, and means for rotating the first axis about said second axis at a speed of rotation relative to the speed of rotation of the chamber about the first axis such that particles in the slurry are subjected to repetitive acceleration.



4,454,042

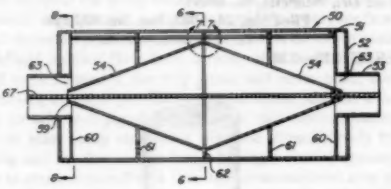
SOLIDS-LIQUIDS SEPARATION DEVICE

Samuel H. Dorcheus, Pelham, Ala., assignor to Envirotech Corporation, Salt Lake City, Utah

Filed Sep. 29, 1982, Ser. No. 427,086

Int. Cl.³ B01D *33/12*

U.S. Cl. 210—401 **15 Claims**



1. In a solids-liquid separation apparatus including a rotatable longitudinally-extending cylindrical drum wherein flow movement of a process fluid from situs A within the cylindrical drum to a higher in elevation situs B outside the drum is desired and wherein said cylindrical drum includes a fluid sump at Situs A within the drum, the improvement which comprises:

(a) bailer scoop means connected to, situate within and extending longitudinally within said cylindrical drum and operable to move into said sump and pick-up fluid therein;

(b) means to rotatively move said bailer scoop means with said drum in a rotary cycle to an elevated fluid discharge position;

(c) an imperforate trough including transverse section walls forming sides of said trough connected to and extending generally co-extensive with said scoop means in said drum and including a sloped trough bottom between said trough sides to laterally flow said fluid; and

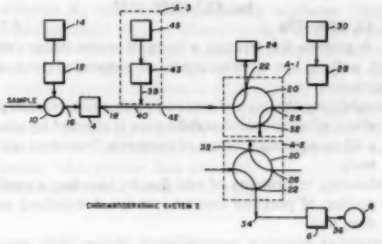
d) outlet means connected to said drum on at least one end of said drum to convey fluid discharging from said scoop means and said trough to situs B, said trough holding fluid in one portion of said rotary cycle and discharging fluid in a subsequent portion of said rotary cycle.

4,454,043

COLUMN SWITCHING PROCEDURE

Chihyuan C. Ting, Creve Coeur, Mo.; David F. Tomkins, Muscatine, Iowa, and Melvin L. Rueppel, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1980, Ser. No. 207,539
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—659 **17 Claims**



1. A method of increasing the capacity of a chromatographic system useful for the quantitative determination of at least one component of interest in a multi-component composition at trace level concentration, said method comprising:

(a) admixing a portion of said multi-component composition with a first mobile phase carrier to form a chromatographically separable composition;

(b) passing said chromatographically separable composition into a first chromatographic separation zone having packing therein thereby forming an eluent of each component of said multi-component composition;

(c) retaining in said chromatographic separation system only the eluent of said component of interest;

(d) admixing at least one additional mobile phase carrier with said retained eluent of said first chromatographic separation zone to form a diluted retained eluent;

(e) passing said retained diluted eluent into a second chromatographic separation zone serially connected to said first chromatographic separation zone having packing therein;

(f) passing a second mobile phase carrier into said second chromatographic separation zone thereby forming a purified eluent containing said component of interest in a concentrated form;

(g) passing said purified eluent into an analytical detection system whereby the concentration of said component of interest is determined.

4,454,044

WATER TREATMENT PROCESS

Max Klein, P.O. Box 3, Dalton, Mass. 01226

Filed Jul. 13, 1981, Ser. No. 282,943
Int. Cl.³ C02F *1/28, 1/42*
U.S. Cl. 210—663 **16 Claims**

1. A water treatment process for removing turbidity-causing impurities from said water, said process comprising:

a. adding to the impure water a minor amount of a filter aid material;

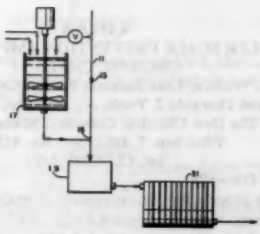
b. contacting said impure water with said filter aid material for a time sufficient for impurities in said water to become absorbed on said filter aid material; and

c. flowing said impure water containing said filter aid material having said impurities absorbed thereon through a pre-filter having a flow rate of at least two (2) liters/min./sq. m., and thereafter through a filter medium in the form of a porous, non-woven matrix made by a wet-lay procedure on a suitable support element and consisting essentially of the following constituents:

(1) randomly arranged, irregularly intersecting and overlapping cellulose fibers in an amount sufficient to retain the integrity or continuity of the mat during said water treatment;

(2) micro-bits produced from a polymer which is non-brittle in expanded form, and selected from (a) an expanded, thermoplastic styrene-polymer, (b) an expanded lower polyolefin, which is the polymer of a ethylenically unsaturated hydrocarbon monomer having from 2 to 6 carbon atoms, (c) an expanded melt alloy of polyethylene with up to about 10 percent by weight of polystyrene, (d) an expanded copolymer of propylene with from about 20 to about 30 percent by weight of ethylene, (e) an expanded melt alloy composed of at least 50 percent by weight of polypropylene and the balance being a copolymer of ethylene with up to about 30 percent of said copolymer being vinyl acetate, or micro-bits of a flexible foamed polyurethane, said polymer micro-bits being substantially completely free of intact cells of the expanded polymer from which they are produced, the amount of said micro-bits present in said filter medium being sufficient to provide the medium with a porosity enabling flow required for said water treatment, and at least one of the following:

(i) a wet web support releasing agent in an amount sufficient to facilitate removal of the filter medium from the support on which it is prepared;



(ii) a wet-strength enhancing agent in an amount sufficient to enhance the wet-strength of said filter medium, but less than that which will impair the functions of the constituents of said filter medium other than said wet-strength enhancing agent;

(iii) an adsorbing agent selected from the group consisting of (a') finely divided activated carbon in an amount below that at which substantial release of finely divided carbon from the filter medium can occur during said water treatment (b') diatomaceous earth in an amount below that at which substantial release of diatomaceous earth from the filter medium can occur during said water treatment; (c') colloidal alumnia monohydrate in an amount sufficient for removing a substantial portion of any chromic acid and its salts from said water undergoing treatment; and (d'') a finely divided ion exchange resin in an amount sufficient to remove a substantial portion of ionized substances from said water undergoing treatment; and

(iv) a wet web strengthening agent in an amount that together with the cellulose fibers is sufficient to provide the filter medium with a degree of tensile strength to withstand manpulation during its preparation, and below that amount at which said agent will agglomerate while being admixed with the aforementioned constituents of the filter medium.

4,454,045

PROCESS FOR PURIFICATION OF MIXTURES CONTAINING WATER, SALTS, GLYCOLATE IONS AND ORGANIC SOLVENTS

Eberhard Perplies, Walluf, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 372,013

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118953

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—672 17 Claims

1. A process for purifying a mixture comprising water, water-soluble salts, glycolate ions and organic solvents, comprising the steps of:

contacting the mixture with a first ion exchanger;

thereafter contacting the product of said first contacting step with a second ion exchanger, said first ion exchanger being either an acidic or a basic ion exchanger and said second ion exchanger being the acidic or basic ion exchanger not utilized for said first ion exchanger;

eluting the mixture contacting said basic ion exchanger to separate the mixture into a fraction of a significantly enriched organic solvent and a second fraction of a significantly enriched glycolate ion content; and

collecting the separated fractions.

4,454,046

BOILER SCALE PREVENTION EMPLOYING AN ORGANIC CHELANT

Steven L. Wallace, Lake Jackson; Freddie Griffin, Jr., Missouri City, and Thorwald J. Tvedt, Jr., Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 7, 1982, Ser. No. 415,069

Int. Cl.³ C02F *5/12*

U.S. Cl. 210—698 4 Claims

1. In a process for the prevention of scale and corrosion in boilers from water containing Fe^{++}, Ca^{++}, or Mg^{++} ions wherein the boiler water is treated with an effective amount of hydrazine as an oxygen scavenger, ammonium hydroxide as a pH control compound and a chelating compound, and wherein the pH is controlled at a value of from about 7 to about 12, the temperature is from about 100° to about 374° C., and the pressure is from about 15 to about 3200 psia the improvement which comprises adding to the boiler water as the chelating compound hydroxyethylethylenediaminetriacetic acid in an amount of from about 1 to about 10 moles of chelant per mole of scale or corrosion producing metal ions present.

4,454,047

PROCESS OF TREATING AQUEOUS SYSTEMS

Harold L. Becker, and Rudolf S. Buriks, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 241,967, Mar. 9, 1981, Pat. No. 4,343,730. This application May 18, 1982, Ser. No. 379,532

Int. Cl.³ B01D *17/04, 21/01;* C02F *1/54, 1/66*

U.S. Cl. 210—705 13 Claims

1. A process of treating an aqueous system comprising adding to said system an effective amount of a stable emulsion of an aqueous internal phase in a non-aqueous external phase, said aqueous internal phase containing a homo- or a copolymer of an acrylamido alkylene quaternary ammonium salt.

11. The process of claim 1 which is a demulsification process.

12. The process of claim 11 when the demulsification system employs flotation.

4,454,048

TREATING WASTE WATER CONTAMINATED WITH A LOW CONCENTRATION OF LATEX

Richard T. Brunbeck, and Joseph C. Sherwood, both of Reading, Pa., assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 346,958, Feb. 8, 1982, Pat. No. 4,383,928, which is a continuation-in-part of Ser. No. 215,694, Dec. 12, 1980, abandoned. This application Apr. 22, 1983, Ser. No. 487,919

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—726 5 Claims

1. A process for treating a body of waste water contaminated with a low concentration of suspended latex which comprises:

destabilizing the latex of said body into a floc of small particulates wherein said destabilization is effected by admixing a dilute aqueous solution of inorganic flocculant with said body;

enhancing separability of said floc by blending a small proportion of portland cement into the destabilized suspension; and

separating resulting cementiferous sludge from remaining aqueous material.

4,454,049

TEXTILE TREATMENT COMPOSITIONS

Neil A. MacGilp, Waterloo, Belgium; Allan C. McRitchie, Tyne and Wear, England; Barry T. Ingram, Tyne and Wear, England, and John Hampton, Tyne And Wear, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 8, 1982, Ser. No. 439,974

Claims priority, application United Kingdom, Nov. 14, 1981, 8134377

Int. Cl.³ D06M *13/46, 13/02, 13/20*

U.S. Cl. 252—8.8 8 Claims

1. A liquid fabric softener concentrate in the form of an isotropic solution comprising

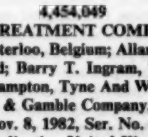
(a) from about 20% to about 75% of substantially water-insoluble cationic fabric softener, at least about 70% of said fabric softener consisting of one or more components together having a melting completion temperature (T_c) of less than 20° C.

(b) from about 3% to about 75% of substantially water-insoluble nonionic extender selected from the group consisting of C_{10}–C_{40} linear and branched hydrocarbons and esters of mono- and polyhydric alcohols with C_8–C_{24} fatty acids, and

(c) from about 10% to about 77% of water-miscible organic solvent,

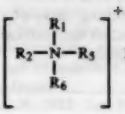
wherein the cationic fabric softener, nonionic extender and organic solvent constitute in total at least about 50% of the concentrate and wherein Component (a) is selected from the following compounds or mixtures thereof:

ammonium compounds of formula



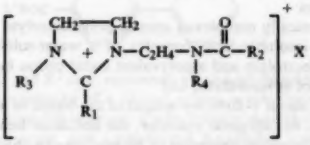
wherein R_1 and R_2 independently represent linear or branched chain alkyl or alkenyl groups of from about 16 to about 24 carbon atoms, R_3 and R_4 independently represent hydrogen or alkyl or alkenyl groups of from 1 to about 4 carbon atoms, and X is a salt counterion, wherein the ammonium compound has an iodine value greater than about 40,

alkoxylated compounds of formula



wherein R_1 and R_2 independently represent linear or branched chain alkyl or alkenyl groups of from about 16 to about 24 carbon atoms, R_5 and R_6 independently represent alkyl or alkenyl groups of from 1 to about 4 carbon atoms or a group of formula $(C_nH_{2n}O)_mH$ wherein n is 2 or 3 and m is from 0 to about 15, provided that the total number of $C_nH_{2n}O$ groups is from 1 to about 20 and wherein the alkoxylated ammonium compound has an iodine value greater than about 20,

imidazolinium compounds of formula



wherein R_1 and R_2 independently represent linear or branched chain alkyl and/or alkenyl groups of from about 16 to about 24 carbon atoms, R_3 and R_4 independently represent hydrogen, alkyl, alkenyl or hydroxyalkyl groups of from 1 to about 4 carbon atoms, and X is a salt counterion, wherein the imidazolinium compound has an iodine value greater than about 40.

4,454,050

AQUEOUS RELEASE AGENT AND LUBRICANT

Jerome W. Bertell, South Holland, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 21, 1983, Ser. No. 476,950
Int. Cl.³ C10M *3/18*
U.S. Cl. 252—42 **20 Claims**

1. An aqueous release agent and lubricant comprising water and from about 0.15 to 30 percent by weight of composition of alkali metal salt of an aromatic polycarboxylic acid and from about 0.015 to 15 percent by weight of composition of an alkali metal salt of an aliphatic polycarboxylic acid such that the weight ratio of aromatic polycarboxylic salt acid salt to aliphatic polycarboxylic acid salt ranges from about 50/50 to about 95/5.

10. A hot forming process for metal comprising applying an aqueous release agent and lubricant comprising water and from about 0.15 to 30 percent by weight of composition of alkali metal salt of an aromatic polycarboxylic acid and from about 0.015 to 15 percent by weight of composition of an alkali metal salt of an aliphatic polycarboxylic acid such that the weight ratio of aromatic polycarboxylic acid salt to aliphatic polycarboxylic acid salt ranges from about 50/50 to about 95/5 to the surface of a hot die so as to form a dry film on said surface, placing the metal in the die, forming the metal into a solid shape which conforms to the die, and removing the solid shaped metal from the die.

4,454,051

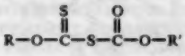
ALKYL XANTHOGEN FORMATE MIXTURE AS FLOTATION AGENT

Ronald D. G. Crozier, 4 Daisy La., Ridgefield, Conn. 06877

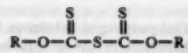
Filed Jun. 4, 1981, Ser. No. 270,362
Int. Cl.³ B03D *1/02*; C22B *3/00*; C07C *154/02*
U.S. Cl. 252—61 **1 Claim**

1. An improved floation collector consisting essentially of a mixture of:

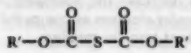
(I) alkyl xanthogen formate of the general formula



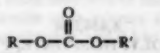
in which R and R' are selected from the group consisting of alkyl groups with 1 to 6 carbon atoms, straight chained or branched, pure or in mixtures; said formate being prepared by reaction of an alkaline alkyl xanthate and an alkyl chloroformate, and the following co-products:



(II)



(III)



(IV)

wherein R and R' are defined as set forth above; and the amount of compound II in said mixture is within the range of 12 to 40%.

4,454,052

LIQUID ABSORBENT FOR ABSORPTION TYPE REFRIGERATOR

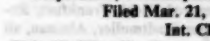
Mitsuyoshi Shoji, Ibaraki; Etsuo Oe; Yoshiharu Honma, both of Hitachi; Shigeki Komatsuzaki, Mito; Morlichi Sato, and Ren Ito, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,794
Claims priority, application Japan, Jan. 28, 1981, 56-10168
Int. Cl.³ C09K *5/04*
U.S. Cl. 252—68 **20 Claims**

1. A stabilized absorption composition comprising

(a) a halogenated hydrocarbon as refrigerant,

(b) a polyethylene glycol methyl ether represented by the formula:



wherein R is hydrogen, CH_3— or CH_3CO—; and n is an integer of 1 to 6, as absorbent, and

(c) at least one stabilizer selected from the group consisting of phosphite esters, epoxy compounds and organotin compounds.

4,454,053

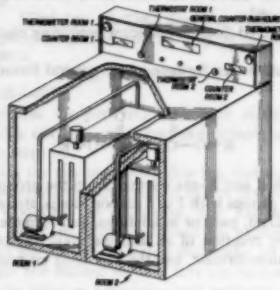
ADDITIVE FOR THE WATER CIRCULATING IN CIVIL AND INDUSTRIAL HEATING PLANTS

Pietro Pittaluga, Genoa, Italy, assignor to T.P. System S.a.s. di Pittaluga Giuseppe & C., Genoa, Italy

Continuation-in-part of Ser. No. 343,167, Jan. 27, 1982, abandoned. This application Mar. 7, 1983, Ser. No. 472,476
Int. Cl.³ C09K *3/02, 3/12*
U.S. Cl. 252—71 **4 Claims**

1. A method for saving fuel in heating plants in which thermal energy is obtained through the combustion of fuel and in which circulating water is used as a heat transfer medium, comprising mixture the circulating water with an aqueous

solution or homogeneous dispersion of a salified polymeric substance selected from the group consisting of a salified homopolymer of acrylic acid, a salified homopolymer of methacrylic acid, and a salified copolymer of acrylic acid and methacrylic acid, said salified polymeric substance being dissolved or homogeneously dispersed in the circulating water in an amount sufficient to decrease the necessary amount of heat input to said heat transfer medium as compared to when water alone is used as the heat transfer medium.



4,454,054

SODIUM TRIPOLYPHOSPHATE, PROCESS FOR MAKING IT, AND ITS USE

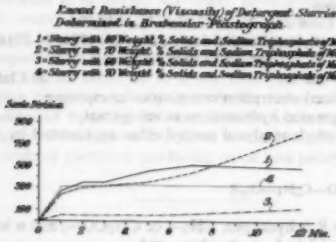
Herbert Landgräber, Hürth; Werner Kowalski, Weilerswist, both of Fed. Rep. of Germany; Johan Scheffer, Vlissingen, Netherlands, and Hans Haas, Swisttal-Strassfeld, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,756

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129079

Int. Cl.[3] **C01B** *25/30, 25/40;* **C11D** *3/06, 11/02*

U.S. Cl. 252—135 **2 Claims**



1. A process for making sodium tripolyphosphate containing up to 95 weight % phase I and 0.1–22.0 weight % water of crystallization and having improved properties for preparing aqueous slurries being intended for the production of detergents based on sodium tripolyphosphate, which process comprises

(a) spray-drying jointly an aqueous sodium orthophosphate suspension containing Na_2O and P_2O_5 in a molar ratio corresponding to the $Na_2O:P_2O_5$ ratio desired for the sodium tripolyphosphate and an aqueous solution or suspension of a compound of a metal selected from calcium, magnesium, zinc or strontium, said metal compound yielding ions in an aqueous medium and being used in amounts of 0.01 to 2.0 weight % calculated as metal and related to the sodium tripolyphosphate;

(b) carrying out the spray-drying by contacting the said orthophosphate suspension and the solution or suspension of the metal compound inside the fluidization-inducing chamber of a spray nozzle and

(c) hydrating the resulting spray-product in known fashion until the spray-product has reached the desired content of water of crystallization.

4,454,055

ABSORBENT COMPOSITION OF MATTER, PROCESS FOR PREPARING SAME AND ARTICLE PREPARED THEREFROM

Edward Richman, Ambler, Pa., and Mark A. Thorn, North Brunswick, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 25, 1980, Ser. No. 181,277

Int. Cl.[3] **C09K** *3/00*

U.S. Cl. 252—194 **21 Claims**

1. A dry, solid, water-swellable absorbent/extender blend, characterized by the improved absorbency of the blend, which comprises:

(a) an ionically complexed anionic polyelectrolyte which is a water-insoluble ionic complex of a water-soluble anionic polyelectrolyte and a polyvalent metal cation having a valence of at least three; and

(b) from about 1–80%, by weight of the blend, of a cellulosic, starch, or inorganic extender, the cellulosic being selected from the group consisting of uncrosslinked sodium carboxymethyl cellulose, methyl cellulose, and hydroxyethyl cellulose; the starch extender being selected from the group consisting of native waxy maize starch, native corn starch, pregelatinized waxy maize starch, pregelatinized corn starch, drum-dried starch succinate, and drum-dried crosslinked hydroxypropyl starch; the inorganic extender being selected from the group consisting of attapulgite clay, sodium montmorillonite clay, seracite, talc, kaolin, diatomaceous silica, and amorphous silica; the absorbency exceeding the sum of the absorbencies, calculated proportionately, of the polyelectrolyte and the extender, when measured by blood-saline pressure retention at pressure of 1.0 psi. and wherein the improvement in the absorbency is at least about 7%.

4,454,056

PROCESS FOR THE PRODUCTION OF ZEOLITES MODIFIED ON THE SURFACE WITH ORGANOSILANES

Udo Kittelmann, Roedermark; Manfred Diehl, Frankfurt; Roland Bergmann, Hanau, and Gunter Stadtmuller, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,634

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1982, 3208598

Int. Cl.[3] **C02F** *1/42;* **C11D** *3/12, 11/04, 17/06*

U.S. Cl. 252—174.15 **22 Claims**

1. A process for the production of a crystalline zeolite in the sodium form having the surface modified with an organosilane comprising reacting the zeolite with 0.02 to 5 weight % based on the amount of zeolite employed of an organosilane of the formula

$$R_n^1SiR^2(OR)_{3-n}$$

where R and R^1 are C_1–C_5 alkyl, methoxy, ethoxy, phenyl, or C_5 to C_8 cycloalkyl and R^2 is a hydrocarbon group having 1 to 8 carbon atoms and free from ethylenic unsaturation and n is 0, 1, or 2.

14. The organosilane surface modified zeolite prepared by the process of claim 1.

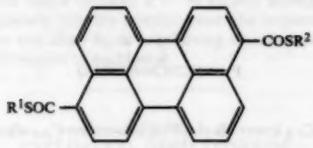
4,454,057

LIQUID CRYSTAL COMPOSITION

Masaharu Kaneko, Kanagawa; Tetsuo Ozawa; Tomio Yoneyama, both of Tokyo; Shuji Imazeki, Ibaraki; Akio Mukoh, Ibaraki, and Mikio Sato, Ibaraki, all of Japan, assignors to Hitachi Ltd. and Mitsubishi Chemical Industries Limited, both of Tokyo, Japan

Filed Jun. 28, 1982, Ser. No. 392,909
Claims priority, application Japan, Jun. 26, 1981, 56-99521
Int. Cl.³ C09K 3/34; G02F 1/13
U.S. Cl. 252—299.1 5 Claims

1. A liquid crystal composition comprising a host nematic, cholesteric or smectic liquid crystal and at least one perylene dye dissolved therein represented by the formula:



wherein R^1 and R^2 each represents an aryl group selected from the group consisting of a phenyl group, a substituted phenyl group, an α-naphthyl group, a substituted α-naphthyl group, a β-naphthyl group, and a substituted β-naphthyl group, or an alkyl group containing 1 to 18 carbon atoms, each of said substituted groups being substituted by at least one alkyl group, alkoxyalkyl group, cycloalkyl group, alkoxy group, aryl group, aralkyloxy group, ester group, acyloxy group or a halogen atom.

4,454,058

CHEMICAL SOLUTION FOR INCREASING THE SURFACE CONDUCTIVITY AND/OR THE VOLUME CONDUCTIVITY OF A SUBSTRATE

Joseph Savit, 751 Vernon Ave., Glencoe, Ill. 60022

Filed Feb. 4, 1983, Ser. No. 463,733
Int. Cl.³ C08L 1/18; H01B 1/00
U.S. Cl. 252—500 15 Claims

1. A chemical solution for increasing the conductivity of a substrate consisting of:

nitrocellulose and a quarternary ammonium compound dissolved in a solvent selected from the group consisting of ethylene glycol monomethyl ether, methyl alcohol and mixtures thereof.

4,454,059

NITROGENOUS DISPERSANTS, LUBRICANTS AND CONCENTRATES CONTAINING SAID NITROGENOUS DISPERSANTS

John F. Pindar, Euclid; Jerome M. Cohen, University Hts., and Charles P. Bryant, Euclid, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 741,184, Nov. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 701,712, Jul. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 540,470, Jan. 13, 1975, Pat. No. 3,980,569, which is a continuation-in-part of Ser. No. 613,664, Sep. 16, 1975, Pat. No. 4,053,428, which is a continuation-in-part of Ser. No. 540,570, Jan. 13, 1975, Pat. No. 3,980,569, which is a continuation-in-part of Ser. No. 451,644, Mar. 15, 1974, abandoned. This application Apr. 16, 1981, Ser. No. 254,611
Int. Cl.³ C10M 1/32
U.S. Cl. 252—51.5 R 15 Claims

1. A composition made by the method comprising

1. reacting at least one phenol compound containing at least one aliphatic or alicyclic substituent of at least about six carbon atoms with at least one aldehyde or precursor thereof in the presence of an alkaline reagent, at a temperature up to about 125° C.; then
2. substantially neutralizing the intermediate thus formed at a temperature up to about 150° C; and then
3. reacting the neutralized intermediate with at least one amino compound which contains one or more amino groups having hydrogen directly bonded to amino nitrogen.

4,454,060

LIQUID DETERGENT COMPOSITION WITH A CATIONIC FOAM STABILIZING COPOLYMER CONTAINING PENDANT QUATERNARY NITROGEN GROUPS AND PENDANT HYDROPHOBIC GROUPS

Kuo-Yann Lai, Kendall Park; Robert C. Pierce, Plainsboro, both of N.J.; Jean Dupré, Levittown, and H. Scott Killam, Holland, both of Pa., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,876
Int. Cl.³ C11D 1/62, 17/08
U.S. Cl. 252—547 20 Claims

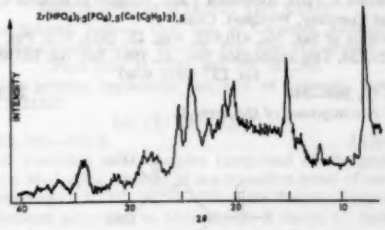
1. A liquid detergent composition consisting essentially of an aqueous medium containing, approximately by weight, 5 to 50% of organic foaming non-cationic detergent material, 0 to 20% aromatic sulfonate hydrotrope, 0 to 8% of C_{10}–C_{18} alkanoic acid C_{2-4} alkanolamide foam stabilizer, and 0.1 to 10% of a cationic foam-stabilizing copolymer containing, approximately by weight, more than 50% of units derived from acrylamide, methacrylamide or a mixture thereof, 0.5 to 2% of pendant quaternary nitrogen, and 0.1 to 10% of pendant C_{8-24} hydrophobic groups.

4,454,061

ORGANOMETALLIC INTERCALATES

Jack W. Johnson, Fanwood, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 146,761, May 5, 1980, which is a division of Ser. No. 000,191, Jan. 2, 1979. This application May 26, 1982, Ser. No. 382,306
Int. Cl.³ C09K 3/00; C07F 7/00, 15/06
U.S. Cl. 252—625 6 Claims



1. A composition of matter comprising an intercalation host and an intercalated guest, said host represented by $H_{1-y}A_yTO_2XO_4.nH_2O$, where A is at least one monovalent cation selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, ammonium and substituted ammonium of the formula RR'R''R'''N+, where R, R', R'', and R''' are selected from the group consisting of hydrogen and hydrocarbon radicals, X is at least one element selected from the group consisting of phosphorus, arsenic and vanadium, T is at least one element selected from the group consisting of uranium and transuranic elements, "y" ranges from 0 to 1 and "n" ranges from 0 to 6 and said guest is an organometallic cation of a neutral organic compound of the formula $M'(C_mH_{m-q}R_q)_2$ where M' is a transition metal selected from groups IB to VIIB and VIII, Rows 4, 5 and 6 of the Periodic Table of Elements, R is selected from the group consisting of C_1–C_2 linear and

C_3–C_{12} linear and branched hydrocarbyls, C_3–C_{12} cyclic alkyls, C_2–C_{12} alkenyls, C_2–C_{12} alkynyls, C_1–C_{12} alkoxy, C_6–C_{18} aryloxy and C_6–C_{18} aryl, "m" is an integer from 5 to 7 and "q" is an integer from 0 to "m," said neutral organic compound being characterized by having a sufficiently low ionization potential to reduce H^+ and by forming a stable corresponding cation.

4,454,062

METHOD FOR IMMOBILIZING RADIOACTIVE NOBLE GASES IN ZEOLITES

Ralf-Dieter Penzhorn, Bruchsal, and Peter Schuster, Wörth, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 173,268

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948515

Int. Cl.³ G21F *9/02*

U.S. Cl. 252—630 **9 Claims**

1. In a method for immobilizing a radioactive noble gas in a zeolite matrix by pressing the noble gas, after heat treatment of the zeolite matrix, into the cavities of the structure of the zeolite matrix under high pressure, and cooling the matrix while maintaining the pressure in order to encapsulate the gas in the cavities, the improvement wherein the matrix is an alkaline earth metal exchanged zeolite of type 5A and of the general composition

$$M_6[(AlO_2)_{12}(SiO_2)_{12}].H_2O,$$

where M is Mg, Ca, Ba or Sr, and said heat treatment and pressing are effected in such a manner that the gas, after being encapsulated in the matrix, is not released from the matrix even at a storage temperature of at least 473° K., by effecting said heat treatment at a temperature in the range of 420° to 530° K., and by effecting the pressing at a temperature in the range from 720° to 870° K. and at a pressure of 200 bar to about 1000 bar.

4,454,063

O,O-DIALKYL-N-PHOSPHONOMETHYL-N-HALOMETHYL ACETAMIDE

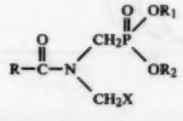
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 410,802, Aug. 23, 1982, U.S. Pat. No. 4,429,124. This application Nov. 21, 1983, Ser. No. 553,450

Int. Cl.³ C07F *9/40*

U.S. Cl. 260—944 **2 Claims**

1. A compound of the formula



wherein R is C_1–C_4 alkyl, R_1 is C_1–C_6 alkyl, R_2 is C_1–C_6 alkyl, and X is chlorine, bromine or iodine.

4,454,064

PROCESS FOR PREPARING PENTAERYTHRITOL PHOSPHATE

Yuval Halpern, Skokie, Ill., and Ron H. Niswander, Lake Jackson, Tex., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 29, 1982, Ser. No. 437,789

Int. Cl.³ C07F *9/15*

U.S. Cl. 260—974 **4 Claims**

1. A process for the preparation of pentaerythritol phosphate comprising mixing approximately equimolar amounts of pentaerythritol and phosphorous oxychloride, in dioxane as a solvent, heating the mixture at a temperature within the range of from about 75° C. to about 125° C., and isolating said pentaerythritol phosphate.

4,454,065

OLIGOPEPTIDE PRODRUGS

Charles Gilvarg, Princeton, N.J., and William D. Kingsbury, King of Prussia, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

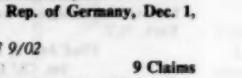
Continuation-in-part of Ser. No. 379,537, May 18, 1982, abandoned. This application Jun. 23, 1983, Ser. No. 507,326

Claims priority, application South Africa, Apr. 22, 1983, 83/2844

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **10 Claims**

1. A compound of the structural formula:



in which:

R^1 is a C_{1-4} lower alkyl, phenyl, ω-amino-C_{2-4}-alkyl or benzyl;

P is H, carbobenzoxy or from 1–4 D- or L-residue units selected from the group consisting of glycyl, phenylglycyl, alanyl, phenylalanyl, lysyl, ornithyl, norvalyl, valyl, norleucyl, isoleucyl or leucyl, either in the natural L- or in the D-configuration; and

Q is hydroxy, benzyloxy or from 1–4 residue units of an amino acid such as glycyl, phenylglycyl, alanyl, phenylalanyl, lysyl, ornithyl, norvalyl, valyl, norleucyl, isoleucyl or leucyl, either in the natural L- or in the D-configuration; and

W is a residue of a nucleophilic, pharmaceutically useful antimicrobial or antiparasitic agent, which agent residue is reversibly substituted and is released by protease degradation, said compound having an L or D,L configuration at both the W-substituted glycyl unit and the R^1 containing unit, or its pharmaceutically acceptable salts; or other ester derivatives.

4,454,066

REDUCTION OF LIGNIN COLOR

Peter Dilling, Isle of Palms, and Peter T. Sarjeant, Sullivans Island, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,391

Int. Cl.³ C07G *1/00*

U.S. Cl. 260—124 R **6 Claims**

1. A method for decolorizing a lignin selected from the group consisting of lignosulfonate and sulfonated lignin surfactants derived from kraft and sulfite pulping processes comprising the steps of

(a) blocking at least 80% of the lignin's phenolic functions with one or more blocking agents, and

(b) oxidizing the blocked lignin with 0.1 to 5 moles chlorine dioxide per 1000 grams of lignin at a pH of 8–11.

4,454,067

CONTINUOUS PRODUCTION OF AZO PIGMENTS

Hartmut Behringer; Kurt Karrenbauer, both of Erftstadt, and Heinrich Rehberg, Hürth-Hermülheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,977

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844634

Int. Cl.³ C09B *41/00*

U.S. Cl. 260—176 **5 Claims**

1. A process for the continuous manufacture of azo pigments, wherein a coupling component is reacted, inside a

reaction zone being filled with a previously produced suspension of the azo pigment to be made, with an aqueous solution of a diazo component at temperatures of 10° to 60° C. and over periods of 0.2 to 4 hours, if desired in the presence of customary addends, which comprises: passing an aqueous suspension of the coupling component in substantially laminar flow upwardly through a cylindrical reaction zone arranged in upright position; introducing the aqueous solution of the diazo component through 2 to 50 serially arranged inlets opening laterally into the reaction zone, the diazo component being admitted in quantities decreasing from below to above and the stoichiometric end point of the coupling reaction being established at the uppermost inlet opening into the reaction zone; and establishing the pH-value typical of each reaction by introducing dilute alkali liquor through 2 to 50 serially arranged inlets opening laterally into the reaction zone, the respective diazo component and alkali liquor inlets being arranged at different levels with respect to each other.

4,454,068

CYCLOALKYL DERIVATIVES OF BENZISOSELENAZOLONES

André Welter, , assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

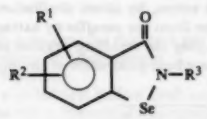
Filed Jul. 12, 1983, Ser. No. 513,088

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226286

Int. Cl.³ C07D *293/12*; A61K *31/33*

U.S. Cl. 260—239 R **8 Claims**

1. Benzisoselenazolones of the general formula I



wherein R^1 and R^2 which are the same or different from each other, represent members selected from the group consisting of hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, hydroxyl, trifluoromethyl, nitro, di-(C_1–C_4-alkyl)-amino, and, R^1 and R^2 together, methylenedioxy, and R^3 is a member selected from the group consisting of the cycloalkyl groups having from 5 to 10 carbon atoms and the cycloalkenyl groups having from 5 to 10 carbon atoms and having a double bond.

4,454,069

CLAVULANIC ACID SALTS AND THEIR PREPARATION FROM THE TERTIARY BUTYL AMINE SALT

Michael A. Cook, Laughton; Alan D. Curzons, Brighton, and Robert B. Wilkins, Worthing, all of England, assignors to Beecham Group Limited, England

Continuation of Ser. No. 179,760, Aug. 20, 1980, abandoned. This application Dec. 24, 1981, Ser. No. 334,438

Claims priority, application United Kingdom, Aug. 24, 1979, 7927544

Int. Cl.³ C07D *498/04*

U.S. Cl. 260—245.3 **17 Claims**

1. A process for the production of clavulanic acid, a pharmaceutically acceptable salt thereof or an ester thereof of the sub-formula (a), (b), (c) or (d):

(a)

-continued

(b)

(c)

or

(d)

wherein R^1 is hydrogen or alkyl, alkenyl or alkynyl of up to 3 carbon atoms; R^2 is hydrogen or methyl; R^3 is phenyl unsubstituted or substituted by a fluorine, chlorine or bromine atom or by a nitro, methyl or methoxy moiety; R^4 is hydrogen or phenyl unsubstituted or substituted by a fluorine, chlorine or bromine atom or by a nitro, methyl or methoxy moiety; R^5 is hydrogen or methyl; R^6 is alkyl of 1 to 4 carbon atoms, phenyl or alkoxy of 1 to 4 carbon atoms; or R^5 is joined to R^6 to form together with —CH.OCO moiety a phthalidyl, dimethylphthalidyl or dimethoxyphthalidyl moiety; and R^7 is alkyl of 1 to 4 carbon atoms, chlorophenyl or nitrophenyl moiety; or CHR^1R^2 is phenacyl or bromophenacyl, which comprises:

(a) subjecting the tertiary-butylamine salt of clavulanic acid to ion-replacement to produce clavulanic acid or a pharmaceutically acceptable salt thereof;

(b) esterifying the tertiary-butylamine salt of clavulanic acid to the desired ester; or

(c) converting the tertiary-butylamine salt of clavulanic acid to the free acid or another salt and esterifying said acid or said other salt to the desired ester.

4,454,070

TRANSITION METAL-COMPLEX COMPOUNDS AND METHOD FOR MAKING THE SAME

Gunter Schmid, Velbert, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,358

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121927

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **2 Claims**

1. A transition metal-complex compound of the general formula $M_{55}L_{12}X_p$, wherein M is a transition metal of one of the subgroups I, V, VI, VII or VIII of the Periodic System of the elements according to Mendelejeff, L stands for ligands having electron donor properties selected from the group consisting of phosphine and phosphite, X is halogen, and p is equal to 6 to 20.

4,454,071

ISOCYANATOARYL SULPHOCHLORIDES

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,229

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855938

Int. Cl.³ C07C *118/04*

U.S. Cl. 260—453 P **14 Claims**

1. A process for the preparation of isocyanatoaryl sulphochlorides comprising reacting 2,4-diisocyanatotoluene, optionally as a mixture of up to 35% by weight of 2,6-diisocyanatotoluene, based on the total quantity of diisocyanate used as a starting material, with

(a) from 0.2 to 2 mol, per mol of starting diisocyanate, of sulphur trioxide or chlorosulphonic acid and

(b) from 0.3 to 20 mol, per mol of starting diisocyanate of an inorganic acid chloride,

either successively or simultaneously at a temperature of from 0° to 160° C. and removing hydrogen chloride from the reaction mixture.

4,454,072

PROCESS FOR THE PREPARATION OF ω-FLUOROSULFATOPERFLUOROALKANOIC ACID DERIVATIVES

Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Langgöns, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,118

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128119

Int. Cl.³ C07C *141/00*

U.S. Cl. 260—458 F **8 Claims**

1. A method for making an ω-fluorosulfatoperfluoroalkanoic acid fluoride of the formula

$$FSO_2—O—CF_2—R_f—COF,$$

wherein R_f is a single bond or branched or unbranched perfluoroalkylene, which method comprises heating an α,ω-bisfluorosulfatoperfluoroalkane of the formula

$$FSO_2—O—CF_2—R_f—CF_2—O—SO_2F$$

at a temperature from −30° C. to 150° C. in the presence of a catalytic amount of at least one member selected from the group consisting of alkali metal fluorides and alkali metal hydrogen fluorides while continuously removing the ω-fluorosulfatoperfluoroalkanoic acid fluoride formed.

4,454,073

N-[CARBOXYL(CARBAMOYL)CARBONYL]-AMINOMETHYL PHOSPHONIC ACIDS

Terence Lewis, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

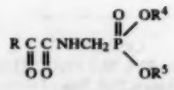
Filed Mar. 26, 1982, Ser. No. 362,276

Claims priority, application United Kingdom, Apr. 16, 1981, 81 12177

Int. Cl.³ C07F *9/38*; A01N *57/20*

U.S. Cl. 260—501.21 **4 Claims**

1. Substituted methylphosphonic acid derivatives of the formula:



(I)

wherein R is (a) a group R^1O wherein R^1 is hydrogen, a cation, or a hydrolyzable ester radical; or (b) a group R^2R^3N— wherein R^2 is hydrogen or an alkyl, alkenyl, or alkynyl group each of which may optionally be substituted by halogen, alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, or phenyl optionally substituted by one or more halogen atoms or C_{1-6}alkoxy, C_{1-6}alkyl, C_{2-6}alkenyl, CF_3, NO_2, or CN groups; R^3 may have any of the values recited for R^2 above or may additionally be a phenyl group or an acyl group; R^4 is hydrogen or cation; R^5 is hydrogen or a cation.

4,454,074

SALTS OF DICYCLOPENTADIENE SULFONATE AND METHOD OF PREPARING

Carter G. Naylor, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,203

Int. Cl.³ C07C *143/20*, *143/22*

U.S. Cl. 260—503 **8 Claims**

1. The compounds consisting of sulfonate or sulfonate-sulfinate salt derivatives of dicyclopentadiene, wherein said salts have a cation selected from the group consisting of alkaline-earth metal, alkali metal and ammonium ions.

4,454,075

PROCESS FOR REMOVING SULFURIC ACID FROM THE REACTION MIXTURE OBTAINED IN THE SULFOXIDATION OF PARAFFINS

Bernhard Mees, Charlotte, N.C., and Herbert Ramloch, Bad Soden am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,805

Int. Cl.³ C07C *143/02*

U.S. Cl. 260—513 R **3 Claims**

1. A process for removing sulfuric acid from the reaction mixture obtained in the sulfoxidation of paraffins, which comprises adding an organic amine sulfate to the reaction mixture and removing the phase consisting of water and sulfuric acid which thereby separates out, adding to the remaining phase containing alkanesulfonic acid and alkanesulfonic acid amine salt an amount of an alkali metal hydroxide sufficient to convert the alkanesulfonic acid and the alkanesulfonic acid amine salt into the alkali metal alkanesulfonate, the organic amine being liberated, removing the paraffin from this mixture, together with the free organic amine, by steam distillation, removing the free organic amine from the paraffin by extraction with sulfuric acid and employing the resulting organic amine sulfate again at the start of the whole process for removing the sulfuric acid.

4,454,076

VARIABLE VENTURI CARBURETOR

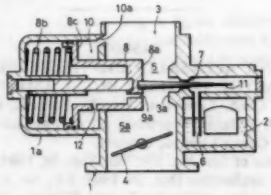
Satomi Wada, Obu; Masanori Senda, Nagoya; Takashi Horii, Aichi, and Yozo Ota, Chiryu, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 30, 1982, Ser. No. 454,577

Claims priority, application Japan, Jan. 8, 1982, 57-1499[U]

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C **2 Claims**



1. In combination with a variable venturi carburetor for an internal combustion engine having a carburetor body, a float chamber, an air intake passage, a venturi portion provided in said air intake passage, a fuel passage communicating with said float chamber and said venturi portion, a fuel jet provided in said fuel passage, a suction piston transversely movable with respect to said venturi portion in response to the load conditions of the engine and adapted to be slidably inserted into a cylindrical portion of said carburetor body, a suction chamber defined by an inside wall of said cylindrical portion and a flange portion of said suction piston, an atmospheric pressure chamber defined by said flange portion of said suction piston

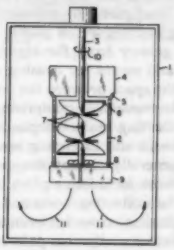
and said carburetor body, a mixing chamber defined between said venturi portion and a throttle valve, and a fuel metering needle fixed to the end of said suction piston at its base portion and having a free end for controlling the annular opening area of a fuel metering portion of said fuel jet by reciprocating motion of said suction piston; the improvement comprising a pressure controlling port provided at the lower peripheral portion of said suction piston, said pressure controlling port being located at such a position as to communicate with said suction chamber and said atmospheric pressure chamber during middle and high intake air flowing stages.

4,454,077

PROCESS AND APPARATUS FOR MIXING A GAS AND A LIQUID

Lawrence M. Litz, Pleasantville, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 8, 1982, Ser. No. 396,281
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—91 **2 Claims**



1. In a process for mixing a gas and a liquid in an apparatus comprising, in combination:
(a) a vessel;
(b) a cylindrical hollow draft member open at both ends and having a theoretical axis running from end to end, said axis being in a vertical position and the upper end of the draft member being conically flared;
(c) an axial flow down-pumping first impeller fixedly connected to a rotatable shaft, (i) the first impeller being positioned within the draft tube; (ii) the shaft corresponding in position to the axis; and (iii) the diameter of the first impeller being less than, but proximate to, the diameter of the draft tube;
(d) first vertical baffling means disposed above the impeller;
(e) means for rotating the shaft; and
(f) means for introducing the gas and the liquid into the vessel and for removing gas and liquid from the vessel,
the process comprising:
(A) energizing the shaft to provide the first impeller with a rotational speed sufficient to cause (i) vortex formation downward from the surface of the liquid in the vicinity of the first vertical baffling means and the flare of the draft member such that the gas is drawn into and down the draft tube and (ii) turbulence in the draft tube;
(B) introducing a sufficient amount of liquid into the vessel to provide, during operation, a liquid level above the upper end of the draft tube; and
(C) recovering liquid from the vessel,
the improvement comprising
(1) providing a rotational speed to the first impeller sufficient to impart a liquid velocity down the interior of the draft tube of at least one foot per second;
(2) increasing the turbulence of the liquid at the shaft proximate to the first impeller;
(3) in the area in the draft tube below the first impeller or in the area below, and immediately exterior to, the lower end of the draft tube, providing second vertical baffling means; and
(4) in the area in the draft tube between the first impeller and the second vertical baffling means providing a radial flow impeller fixedly connected to the shaft whereby a high shear zone is created in the area heretofore mentioned in this paragraph (4).

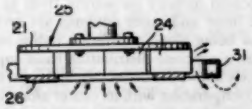
2. In an apparatus for mixing a gas and a liquid comprising, in combination:
(a) a vessel;
(b) a cylindrical hollow draft member open at both ends and having a theoretical axis running from end to end, said axis being in a vertical position and the upper end of the draft member being conically flared;
(c) an axial flow down-pumping first impeller fixedly connected to a rotatable shaft, (i) the first impeller being positioned within the draft tube; (ii) the shaft corresponding in position to the axis; and (iii) the diameter of the first impeller being less than, but proximate to, the diameter of the draft tube;
(d) first vertical baffling means disposed above the impeller;
(e) means for rotating the shaft; and
(f) means for introducing the gas and the liquid into the vessel and for removing liquid from the vessel,
the improvement comprising:
(1) protuberances or indentations located on the shaft or first impeller of sufficient size, and positioned, to increase the turbulence at the shaft proximate to the first impeller;
(2) second vertical baffling means located in the area in the draft tube below the first impeller or in the area below, and immediately exterior to, the lower end of the draft tube; and
(3) a radial flow impeller fixedly connected to the shaft located in the area in the draft tube between the first impeller and the second vertical baffling means whereby a high shear zone is created in said area.

4,454,078

MIXING SYSTEMS HAVING AGITATORS FOR MIXING GAS WITH LIQUID

Horst P. Engelbrecht, Canadaigua, and Ronald J. Weetman, Rochester, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 10, 1980, Ser. No. 205,378
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—93 **4 Claims**



1. A mixing system having an agitator rotated by a motor for mixing a gas with a liquid within a container comprising, mixing means including motor rotated agitator means having a fixed sparge ring about its periphery for circulating liquid over the sparge ring and mixing the gas with the liquid, wherein improved mixing means comprises:
(a) the agitator means having a single solid disc adapted to be secured on its upper side to a motor driven shaft,
(b) the single solid disc having a plurality of agitator blades on its lower side only, the blades being secured along their upper edges to a lower side of the disc and extending in a generally radial direction relative to a central area of the disc for inducing liquid from the central area of the disc into the blades and expelling the liquid over the sparge ring to mix gas from the sparge ring with the liquid,
(c) the agitator means including a lower cover plate for the agitator blades secured to lower edges of the agitator blades and having a central opening to permit input of fluid to the central area of the disc and into the agitator blades, but within an area spaced from the sparge ring as

determined by the size of the central opening in the cover plate,

(d) whereby liquid can be expelled from the outer ends of the agitator blades at an angle closer to normal relative to an axis of rotation of the disc than would be provided without the cover plate, and

(e) the sparge ring comprising a ring of substantially square cross section having orifices for discharging gas downwardly into liquid output of the agitator.

4,454,079

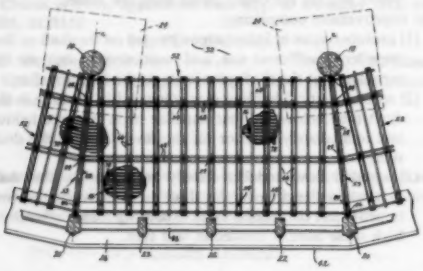
CIRCULAR COOLING TOWER WITH IMPROVED FILL SUPPORTING STRUCTURE AND PROCESS OF FORMING

Paul D. Hoffmann, Des Peres, Mo., assignor to Lilie-Hoffmann Cooling Towers, Inc., St. Louis, Mo.

Filed Jul. 2, 1982, Ser. No. 394,525

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—111 **10 Claims**



1. A process for providing a circular cooling tower with a fill that is capable of dispersing water that passes through it, the cooling tower having a center axis and including a circular collecting basin formed from concrete with its center along the axis, inner and outer columns arranged in concentric inner and outer rows, respectively, along the collecting basin with the common center of the two circular rows being along the center axis, the inner columns corresponding in number to the outer columns and each outer column, with respect to the center axis, being located directly outwardly from an inner column such that the inner and outer columns are arranged in pairs with each pair being along a different radius emanating from the center axis, a concrete distribution basin supported on the columns directly above the collecting basin and being of generally annular configuration with its center along the center axis, the distribution basin being configured to contain an elevated pool of water and having nozzles which enable water to flow under the influence of gravity from the elevated pool toward the collecting basin, and means for causing air to flow generally radially through the space between the collecting and distribution basins, said process comprising: erecting on the collecting basin a framework that is, in terms of support, independent of the columns and distribution basin and extends upwardly from the collecting basin to generally occupy the space between the two basins, the framework including a plurality of masts extending upwardly from the collecting basin and arranged in straight and parallel longitudinal rows between adjacent pairs of columns, the masts between adjacent pairs of columns also being arranged in parallel transverse rows except for the masts at the ends of the longitudinal rows which lie along the radii defined by such columns, longitudinal ties extended horizontally along the longitudinal rows and being fastened to the masts with the longitudinal ties between any adjacent pairs of columns being straight and parallel and oblique to the longitudinal ties located beyond those pairs of columns, cross ties extended along the transverse rows of masts and likewise being fastened to the masts with the cross ties between the radii formed by any adjacent pairs of columns being parallel and oblique to the cross ties located at or immediately beyond those pairs of columns; hanging grids from the framework such that they are presented vertically throughout the framework; and extending fill slats through the grids such that the fill slats are supported by the grids and are positioned in the path of the water as it flows from the distribution basin to the collecting basins, whereby the water is dispersed.

2. In combination with a circular cooling tower having a center axis and including a circular collecting basin formed from concrete with its center along the axis, inner and outer columns arranged in concentric inner and outer rows, respectively, along the collecting basin with the common center of the two circular rows being along the center axis, the inner columns corresponding in number to the outer columns and each outer column, with respect to the center axis, being located directly outwardly from an inner column such that the inner and outer columns are arranged in pairs with each pair being along a different radius emanating from the center axis, a concrete distribution basin supported on the columns directly above the collecting basin and being of generally annular configuration with its center along the center axis, the distribution basin being configured to contain an elevated pool of water and having nozzles which enable water to flow under the influence of gravity from the elevated pool toward the collecting basin, and means for causing air to flow generally radially through the space between the collecting and distribution basins, the improvement comprising: a framework supported on the collecting basin independently of the columns and distribution basin and extending upwardly from the collecting basin to generally occupy the space between the two basins, the framework including a plurality of masts extending upwardly from the collecting basin and arranged in straight and parallel longitudinal rows between adjacent pairs of columns, the masts between adjacent pairs of columns also being arranged in parallel transverse rows except for the masts at the ends of the longitudinal rows which lie along the radii defined by such columns, longitudinal ties extended horizontally along the longitudinal rows and being fastened to the masts with the longitudinal ties between any adjacent pairs of columns being straight and parallel and oblique to the longitudinal ties located beyond those pairs of columns, cross ties extended along the transverse rows of masts and likewise being fastened to the masts with the cross ties between the radii formed by any adjacent pairs of columns being parallel and oblique to the cross ties located at or immediately beyond those pairs of columns; grids supported vertically on the framework throughout the framework; and fill slats extended through and supported on the grids such that the fill slats are positioned in the path of the water as it flows from the distribution basin to the collecting basins, whereby the water is dispersed.

4,454,080

FUEL FLOW AUTOMATIC MODULATING AND ECONOMIZING CARBURETOR JET ASSEMBLY

Cristobal Acosta, Los Rozales, Venezuela, assignor to Fadeipca International, Corp., Miami, Fla.

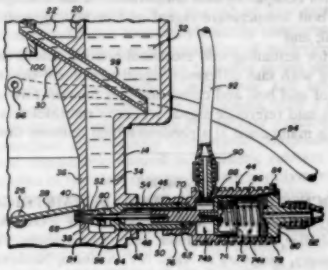
Filed Mar. 23, 1982, Ser. No. 360,990

Int. Cl.³ F02M *3/04*

U.S. Cl. 261—41 D **9 Claims**

1. In a carburetor of the type including an air and fuel mixture passage extending therethrough, a throttle plate shiftable between open and closed positions, an idle fuel port opening into said passage immediately downstream from said throttle plate and a vacuum port opening into a venturi portion of said passage upstream from said throttle plate and subject to increases in vacuum as the speed of said air flow through said passage increases, said idle fuel port including a first end opening into said passage, a second end opening outwardly of said carburetor and an intermediate portion opening into a chamber of said carburetor having liquid fuel therein; the improvement comprising a combined idle fuel adjustment, idle fuel aeration and high speed engine fuel consumption reduction valve assembly, said valve assembly including a tubular needle valve

body defining a central passage extending therethrough and threaded in said idle port second end, said tubular needle valve body including a hollow externally tapered inner end tip adjustable axially of said first end of said idle fuel port, said tubular needle valve body including at least one lateral port means formed therein outwardly of said inner end tip opening outwardly into the intermediate portion of said idle fuel port and an outer open end, a needle valve loosely reciprocal in said



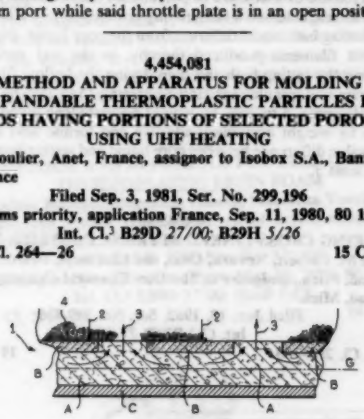
central passage and including a first tapered end axially shiftable past said lateral port means toward and away from said inner end tip, and force means operatively associated with said needle valve for biasing said needle valve inwardly toward an inner limit position and to progressively shift said needle valve outwardly from said inner limit position responsive to increases in engine speed of operation as sensed at said venturi vacuum port while said throttle plate is in an open position.

4,454,081

METHOD AND APPARATUS FOR MOLDING EXPANDABLE THERMOPLASTIC PARTICLES IN MOLDS HAVING PORTIONS OF SELECTED POROSITY USING UHF HEATING

Joël Soulier, Anet, France, assignor to Isobox S.A., Bannalec, France

Filed Sep. 3, 1981, Ser. No. 299,196
Claims priority, application France, Sep. 11, 1980, 80 19606
Int. Cl.³ B29D *27/00*; B29H *5/26*
U.S. Cl. 264—26 **15 Claims**



1. A method of manufacturing expanded, non-polar plastic articles from pre-expanded particles, said method comprising the steps of:

(a) preparing a mold of suitable shape and size from at least two juxtaposed porous materials which together define a porous mold cavity, the first of said at least two juxtaposed porous materials forming one or more zones A fronting on the surface of the mold cavity which have capillary forces which allow vapor developed in the interior of the cavity to escape from it into the mold, and the second of said at least two juxtaposed porous materials forming one or more zones B fronting on the surface of the mold cavity which have capillary forces which bring liquid from the interior of the mold to the mold cavity, thereby creating a harmonious liquid-vapor circulation, and an impervious layer on the opposite side of said at least two juxtaposed porous materials from the mold cavity, which impervious layer prevents or retards loss of liquid from the mold and which thereby cooperates with said at least two juxtaposed porous materials to create said harmonious liquid-vapor circulation; then

(b) distributing in the mold cavity the appropriate amount of a polar liquid;

(c) introducing into the mold pre-expanded plastic material in particulate; and

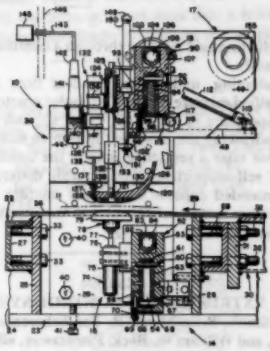
(d) subjecting the mold to UHF radiation.

4,454,082

METHOD AND APPARATUS FOR MONITORING THE THICKNESS OF A FOAMED EXTRUDATE IN AN ENVIRONMENTAL CONTROL CHAMBER DOWNSTREAM OF AN EXTRUSION DIE

James R. Cisar, Cuyahoga Falls, Ohio, and Attila Grauzer, Akron, both of Ohio, assignors to U.C. Industries, Tallmadge, Ohio

Filed Sep. 24, 1982, Ser. No. 422,679
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—40.1 **55 Claims**



1. A foam extrusion control method comprising the steps of:

(a) operatively engaging a pair of opposed shoes against respective opposite side surfaces of a foam extrudate exiting an extrusion die at or just downstream of the point at which the extrudate takes its final shape in a vacuum chamber;

(b) allowing at least one of the shoes to move towards and away from the other in response to variations in the thickness of the extrudate passing therebetween;

(c) using transducer means operatively connected to said shoes to provide an output signal representative of relative shoe positions and thus the thickness of the extrudate passing therebetween;

(d) supplying such output signal to monitoring circuitry providing a corresponding readout of product thickness data outside the vacuum chamber; and then

(e) making immediate and responsive extrusion die adjustments by means of remote die adjustment devices located outside the vacuum chamber as needed to bring or maintain desired extrudate thickness.

4,454,083

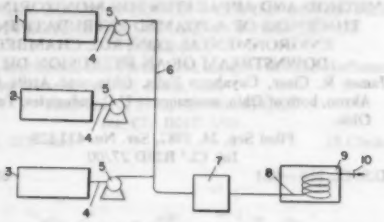
CONTINUOUS MICROENCAPSULATION

Robert W. Brown, and Lester A. Balster, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Dec. 21, 1981, Ser. No. 332,385
Int. Cl.³ B01J *13/02*
U.S. Cl. 264—4.7 **3 Claims**

1. A process for continuously manufacturing minute capsules in a closed capsule manufacturing conduit comprising the steps of:

(a) introducing
(i) system modifier material selected from the group consisting of poly(ethylene-co-maleic anhydride), poly(-methylvinylether-co-maleic anhydride), poly(acrylic acid), poly(propylene-co-maleic anhydride), poly(-butadiene-co-maleic anhydride) and poly(vinyl acetate-co-maleic anhydride),
(ii) intended capsule core material, and
(iii) methylol melamine or etherified methylol melamine to form a mixture in an aqueous manufacturing vehicle;



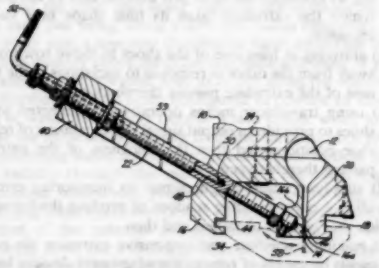
(b) conducting said mixture through a continuous emulsification mill;
(c) conducting, under non-turbulent flow conditions, the emulsified mixture through a tubular reactor maintained at a temperature of about 40° to 95° C.; and
(d) withdrawing the mixture through an exit opening of the conduit after a residence time in the conduit sufficient to yield self-supporting capsule wall material enwrapping the intended capsule cores, said mixture consisting of a dispersion system of capsules in the residual manufacturing liquid.

4,454,084

EXTRUSION DIE CONTROL SYSTEM

David J. Smith, Belle Mead; R. Ted Scharenberg, Whitehouse Station, and William W. Beck, Piscataway, all of N.J., assignors to Leesona Corporation, Warwick, R.I.

Filed Jun. 9, 1982, Ser. No. 386,735
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—40.1 **12 Claims**



1. Apparatus for controlling the thickness of plastic film from an extrusion die comprising:
a die body having opposing jaw surfaces forming an opening therebetween, one of said jaw surfaces being adjustable with respect to the other to control the width of said opening;
a plurality of thermal die adjusting bolts disposed along said one jaw surface, said bolts including electrical heating means for causing said bolts to expand and reduce the width of said opening upon application of increasing electrical power and to contract and widen said opening upon a reduction of said electrical power;
thickness measurement and scanning means for measuring the thickness of plastic film passing through said opening and at different transverse locations along said film, said measurement means providing a signal proportional to the thickness of said film;
temperature sensing means positioned at each said bolt for sensing the temperature of said bolts and providing a signal proportional to said bolt temperature;
means for converting said thickness measurement signal into a temperature reference signal;
means for comparing said temperature reference signal with said bolt temperature signal and providing a difference signal; and
means for actuating said electrical heating means in accordance with said difference signal to control the temperature of said bolt and cause said bolt temperature signal to reach said reference signal whereby the thickness of said film is maintained at a predetermined uniform dimension.

4,454,085

PROCESS FOR PRODUCING ASYMMETRICAL HOLLOW FILAMENT MEMBRANES OF POLYAMIDE

Erich Schindler, and Franz Maier, both of Obernburg, Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Sep. 20, 1982, Ser. No. 421,112
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138525
Int. Cl.³ B01D *39/16*
U.S. Cl. 264—41 **11 Claims**

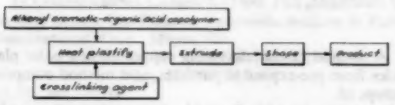
1. Process for the production of an asymmetrical hollow filament membrane suitable for ultrafiltration and/or microfiltration, comprising extruding a spinning solution composed of a polyamide or a mixture of polyamides and/or copolyamides with formic acid and a coagulating core liquid into a coagulating setting bath liquid different from the core liquid, stretching hollow filaments produced thereby, in the wet state, after leaving the setting bath and then drying the hollow filaments, wherein said spinning solution containing 15 to 25% by weight of polyamide, 5 to 20% by weight polyethylene glycol, up to 10% by weight customary additive and formic acid and the pH-value difference between core liquid and setting bath liquid is at least 3.

4,454,086

MAKING CROSS-LINKED STYRENE POLYMER FOAM

John M. Corbett, Newark, Ohio, and Charles R. Bearden, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 18, 1982, Ser. No. 389,836
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—53 **19 Claims**

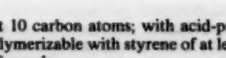


1. Method for the preparation of synthetic resinous thermoplastic products which comprises providing an acid-containing resinous polymer of an alkenyl aromatic monomer having copolymerized therewith at least about 60 percent by weight of at least one monomer of the Formula:

$$CH_2=\underset{\displaystyle G}{\underset{|}{C}}-Ar, \qquad (I)$$

wherein G is selected from the group consisting of hydrogen and methyl and Ar is an aromatic radical, including various alkyl- and halo-ring-substituted aromatic units, of from 6 to

about 10 carbon atoms; with acid-providing monomer that is copolymerizable with styrene of at least one other monomer of the Formula:



(II)

wherein Z is selected from the group consisting of hydrogen, alkyl radicals that contain not more than about 4 carbon atoms and carboxyl units when X is devoid of any carboxylating attachments; and X is a monoethylenically unsaturated substituent selected from the group consisting of methylene, alkenyl units containing from 2 to about 5 carbon atoms and, when Z is not carboxyl, carboxylated methylene and monocarboxylated alkenyl and alkene units containing from 2 to about 5 carbon atoms; the same having any further balance, if any, of copolymerized ethylenically unsaturated components, monomers and elastomeric natural or synthetic rubbers of at least one member of the class of same that are copolymerizable with styrene; feeding and passing through a mixing, malaxating extrusion apparatus acid-containing polymer, operating the extrusion apparatus at a temperature of between about that of the heat softening temperature of said polymer and that of the decomposition temperature of the polymer; and at one or more points within the apparatus at about or between its feed point and the point of extrudate discharge therefrom, incorporating into said polymer mass passing through said apparatus an effective interconnecting and network-building additament quantity of a cross-linking agent that is reactive with the free carboxyl entities in said polymer whereby to cross-link said mass of polymerizate material therein; and finally discharging said cross-linked mass of polymer material from said extruder apparatus.

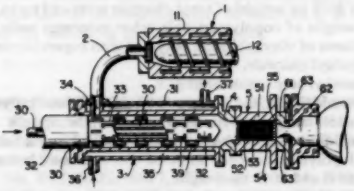
2. The method of claim 1, wherein a blowing agent is admixed with the resinous polymer and the extrudate discharged from the extruder is converted directly into an extrusion molded product through appropriate forming means on the discharge end of said extruder apparatus.

4,454,087

METHOD AND APPARATUS FOR PREPARING THERMOPLASTIC RESIN FOAM

Motoshige Hayashi; Shigetoshi Tanaka; Motokazu Yoshii, all of Nara, and Tsuneo Doi, Ibaragi, all of Japan, assignors to Sekisui Plastics, Nara, Japan

Filed May 17, 1982, Ser. No. 379,085
Claims priority, application Japan, May 18, 1981, 56-75442
Int. Cl.³ B29D *27/00*; B29F *3/02*
U.S. Cl. 264—53 **14 Claims**



1. A method for preparing a thermoplastic foam board having a thickness greater than 10 mm by extruding molten thermoplastic resin having uniformly distributed therein a foaming agent for said resin, the method comprising the continuous steps of:

(a) introducing an extruded mass of said molten thermoplastic resin from an extrusion zone into a cooling zone;

(1) the cooling zone comprising an elongated barrel having a rotating member positioned axially therein in spaced relationship to the barrel so as to provide a passage for the extruded mass between an outer surface of the rotating member and an inner surface of the barrel,

(2) the temperature of the cooling zone being controlled by fluid heat exchange, and

(3) the extruded mass being under pressure in the extrusion zone and in the cooling zone;

(b) passing the pressurized extruded mass through said passage while simultaneously:

(1) intimately mixing the mass by means of projections extending radially from the outer surface of the rotating member into the passage and reaching a close proximity to the inner surface of the barrel and

(2) substantially lowering the temperature of the mass, the cooled mass being maintained in its molten flowable state;

(c) dividing the cooled mass into a plurality of separate, non-parallel streams in a zig-zag mixer under substantially adiabatic conditions;

(d) separating and recombining at least a portion of said streams in said zig-zag mixer under substantially adiabatic conditions to form a combined homogeneous mass having a substantially uniform temperature; and

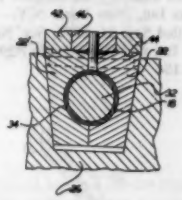
(e) extruding the homogeneous mass into a lower pressure zone to form a substantially uniform thermoplastic foam.

4,454,088

METHOD OF MOLDING A LOW FRICTION BEARING

Charles S. White, 35815 42nd St., Palmdale, Calif. 93550

Division of Ser. No. 132,267, Mar. 20, 1980. This application May 10, 1982, Ser. No. 376,787
Int. Cl.³ B29B *1/02*; C10H *7/28*
U.S. Cl. 264—115 **6 Claims**



1. A process for making a low friction bearing from filaments of bondable material and filaments of low friction material and bonding resin, said process comprising the steps of:

twisting together the filaments of bondable material and the filaments of low friction material to form a bondable low friction yarn;

impregnating said bondable low friction yarn with the bonding resin;

chopping said bondable low friction yarn; and

placing said chopped and impregnated bondable low friction yarn into a mold cavity configured in the shape of the low friction bearing, and applying pressure to said yarn to mold said yarn to form the low friction bearing.

4,454,089

PROCESS FOR THE PRODUCTION OF PELLETS OF A HEAT FUSIBLE THERMOSETTABLE MOLDING COMPOSITION

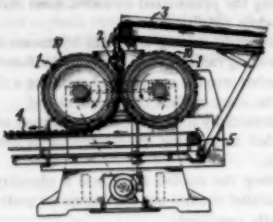
Henry P. Barker, Lenox, and Lewis J. Rummings, Pittsfield, both of Mass., assignors to Plastics Engineering Company, Sheboygan, Wis.

Continuation of Ser. No. 922,203, Jul. 7, 1978, abandoned. This application Apr. 21, 1982, Ser. No. 370,465
Int. Cl.³ B01J *2/22*
U.S. Cl. 264—140 **8 Claims**

1. A process for producing pellets of a heat-fusible thermo-

setting molding composition, said process consisting essentially of the following steps:

(a) supplying said composition in a molten condition at a temperature of from about 150° F. to about 250° F. between a rotating calendering roll having recesses and



another engaging roll which forms said melt into a sheet of raised pellets, which pellets have one dimension of at least 1/16th inch,

(b) removing said sheet of pellets from said rolls, and

(c) separating said pellets from said sheet.

4,454,090

METHOD OF FORMING THE BRIDGE PORTION IN A FRAME FOR EYEGLASSES

Luis E. Saumell, Miami, Fla., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 26, 1983, Ser. No. 535,565

Int. Cl.³ B28B *1/48;* B29C *17/08*

U.S. Cl. 264—154 **8 Claims**

1. A method of forming a bridge portion in a frame for eyeglasses having predetermined dimensions substantially corresponding to the bridge of a predetermined nose, said method comprising the steps of:

(a) obtaining a negative impression of a given wearer's nose substantially at the bridge portion thereof,

(b) forming a hardened plastic material positive duplicate of the nose from said negative impression,

(c) forming a metallic material negative from said positive duplicate wherein said metallic material is of a predetermined hardness,

(d) providing a plastic material frame portion structured and dimensioned for shaping into a bridge portion on a pair of eyeglasses,

(e) simultaneously tracing the configuration of at least the bridge portion of said metallic material negative and shaping said plastic material frame portion from said tracing in corresponding configuration to that of said tracing, and

(f) cutting said shaped frame portion into a bridge portion of an eyeglass frame corresponding to the dimension and configuration of the wearer's nose.

4,454,091

SOLUTIONS, WHICH CAN BE SHAPED, FROM MIXTURES OF CELLULOSE AND POLYVINYL CHLORIDE, AND SHAPED ARTICLES RESULTING THEREFROM AND THE PROCESS FOR THEIR MANUFACTURE

Pierre Chion, Bron; Jacques Menault, Charbonnieres-les-Bains; Henry Rodier, Sainte-Foy-les-Lyon, and Jean-Paul Sacré, Meyzieu, all of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Jun. 10, 1981, Ser. No. 272,251

Claims priority, application France, Jun. 10, 1980, 80 12922

Int. Cl.³ C08K *5/41;* D01F *8/04*

U.S. Cl. 264—171 **20 Claims**

1. Process for the manufacture of yarns, filaments and fibers, said process comprising:

(a) providing a spinnable solution consisting essentially of:

cellulose having a degree of polymerization of at least 200;

polyvinyl chloride polymer selected from the group consisting of vinyl chloride homopolymers, copolymers thereof containing at least 80% by weight of vinyl chloride units and up to 20% by weight of copolymerizable other monomer units, and mixtures of vinyl chloride homopolymer with super chlorinated polyvinyl chloride;

dimethyl sulfoxide; and

formaldehyde; the weight ratio of cellulose/polyvinyl chloride polymer being between 0.05 and 0.5, the weight ratio of formaldehyde/cellulose being between 0.2 and 2, the total polymer concentration of the solution being between 6 and 20% by weight, and the chlorine content of the polyvinyl chloride polymer being at least 45% by weight; and

(b) spinning said solution through a spinnerette into contact with a coagulating medium to obtain said yarns, filaments and fibers.

9. Fibers, filaments and yarns based on cellulose and polyvinyl chloride, said fibers, filaments and yarns being formed according to the process as claimed in claim 1, the weight ratio of cellulose/polyvinyl chloride in said fibers, filaments and yarns being between 0.5 and 0.5, each polymer being present in the form of fibrils substantially oriented along the axis of the fiber and closely interlaced, with the cellulose macromolecules partially involved in a three-dimensional crystal la.tice characteristic to cellulose II and the polyvinyl chloride fibrils forming a continuous three dimensional lattice.

12. Shapable solutions consisting essentially of;

(a) cellulose having a degree of polymerization of at least 200,

(b) polymer selected from the group consisting of vinyl chloride homopolymers, copolymers thereof containing at least 80% by weight of vinyl chloride units and up to 20% by weight of copolymerizable other monomer units, and mixtures of vinyl chloride polymer with superchlorinated polyvinyl chloride,

(c) dimethyl sulphoxide and

(d) formaldehyde, the weight ratio of cellulose/polyvinyl chloride being between 0.05 and 0.5, the weight ratio formaldehyde/cellulose being between 0.2 and 2 and the total polymer concentration of the solutions being between 6 and 20% by weight.

4,454,092

METHOD OF PRODUCING PARTIALLY CROSSLINKED RUBBER-RESIN COMPOSITION

Shizuo Shimizu; Shunji Abe, and Akira Matsuda, all of Higashi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 5, 1982, Ser. No. 405,549

Claims priority, application Japan, Aug. 7, 1981, 56-123643

Int. Cl.³ B29B *1/10*

U.S. Cl. 264—349 **5 Claims**

1. A method of producing partially crosslinked rubber-resin

composition comprising directly feeding a pelletized peroxide-curable olefin copolymer rubber and a peroxide-decomposing polyolefin resin together with an organic peroxide compound to a twin-screw extruder so that the rubber and the resin are subjected to a dynamic heat treatment in the presence of the peroxide under the following conditions:

$$X \leqq 200, \text{ and}$$

$$Y \geqq 0.003X + 0.12$$

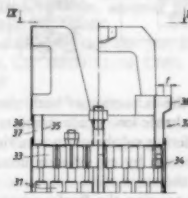
wherein "X" is the weight of the copolymer rubber (g/100 particle), and "Y" is the specific energy at the extrusion (KWhr/kg).

4,454,093

FUEL ASSEMBLY WITH A WATER DISTRIBUTION CHANNEL

Olov Nylund, and Bengt Ode, both of Västerås, Sweden, assignors to AB Asea-Atom, Västerås, Sweden

Filed Oct. 30, 1981, Ser. No. 315,604
Claims priority, application Sweden, Dec. 19, 1980, 8008986
Int. Cl.³ G21C *15/18*
U.S. Cl. 376—282 **5 Claims**



1. A fuel assembly for a nuclear power reactor, comprising:
a plurality of groups of vertical fuel rods;
a plurality of wall systems, each wall system substantially surrounding one of said groups of fuel rods and extending along a greater part of the length of said fuel rods;
an annular fuel channel portion extending above said plurality of wall systems, a horizontal projection of said annular fuel channel portion surrounding all of the fuel rods of said fuel assembly, said annular fuel channel portion having an inner circumference;
a substantially horizontal water distribution channel extending above said groups of fuel rods as well as along and adjacent to most of said inner circumference, said water distribution channel being upwardly open and comprising means for receiving emergency cooling water supplied from a location above at least one of said groups of fuel rods and for distributing water so received to at least one of the remaining groups of fuel rods.

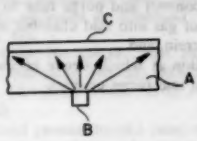
4,454,094

TEST INDICATOR FOR SUBSTANCES IN LIQUIDS

Karl T. Björling, Tumba, Sweden, and Ann-Marie M. S. Grönberg, London, England, assignors to Alfa-Laval AB, Tumba, Sweden

PCT No. PCT/SE82/00057, 371 Date Oct. 14, 1982, 102(e) Date Oct. 14, 1982, PCT Pub. No. WO82/03127, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 1, 1982, Ser. No. 438,861
Claims priority, application Sweden, Mar. 2, 1981, 8101322
Int. Cl.³ G01N *21/78*
U.S. Cl. 422—56 **7 Claims**

1. A device for indicating the presence of a defined substance in a liquid test medium comprising a substantially inert permeable substrate of substantially uniform thickness, a first reagent deposited in a first area of said substrate and being capable, upon contact with said test medium, of releasing a mobile substance capable of reacting with said defined substance, and a second reagent deposited in a second area of said substrate remote from said first area, and said second reagent being capable of changing color upon contact with said mobile



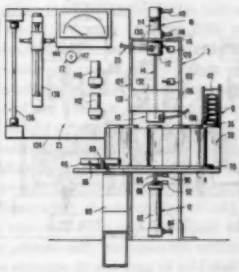
substance, certain portions of said second area being more remote from the nearest portion of said first area than are other portions of said second area.

4,454,095

AUTOMATIC CHEMICAL ANALYSIS DEVICES AND METHODS

John K. Holt, Ft. Pierce, Fla., assignor to Harbor Branch Foundation, Inc., Fla.

Filed Jul. 21, 1982, Ser. No. 400,442
Int. Cl.³ G01N *21/00, 35/04*
U.S. Cl. 422—64 **8 Claims**



1. An automatic chemical analysis device comprising:
a turret journaled for rotation about a vertical axis, said turret having a plurality of peripheral cavities to receive and transport liquid sample ampoules encased in tubular sleeves,
resilient sealing means to form a fluid-tight seal between each sleeve and ampoule encased therein,
conveyor means to deliver said sleeve encased ampoules into said turret cavities,
means to index seriatum said turret cavities into position at a work station,
a smash unit into which the upper ends of the sleeve and encased ampoule positioned at said work station may be inserted to create a fluid-tight chamber, said smash unit having a gas exit line connected with said chamber through a wall thereof and a purge tube inlet in the top thereof,
plunger means at said work station to raise the sleeve encased ampoule located in said turret cavity at said work station and insert same into said smash unit,
an elongated purge tube positioned vertically above said smash unit with the lower end thereof extending through said tube inlet into said chamber,
seal means to provide a fluid-tight seal between said purge tube and said tube inlet,
means to move said purge tube longitudinally between a upper position where its lower end, while within said chamber, is above the top end of the ampoule located in the chamber and a lower position where its lower end

extends into said ampoule near the bottom thereof, movement of said purge tube from said upper position to said lower position serving to break said top end of said ampoule,

tube means to connect said purge tube to a gas source for introduction of gas into said chamber and said ampoule positioned therein, and

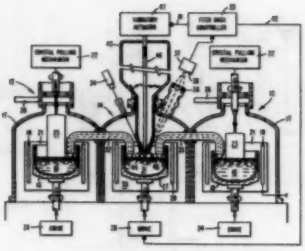
a discharge station at which sleeve encased ampoules are removed from said turret cavities.

4,454,096

CRYSTAL GROWTH FURNACE RECHARGE

Robert E. Lorenzini; Anthony C. Bonora, both of Atherton, and Karl Lorenz, Redwood City, all of Calif., assignors to Siltec Corporation, Menlo Park, Calif.

Filed Jun. 15, 1981, Ser. No. 273,910
Int. Cl.³ C30B 15/12
U.S. Cl. 422—249 **1 Claim**



1. Apparatus for replenishing molten semiconductor material in a plurality of growth crucibles from which one or more solid boules of such material are to be formed, comprising:

A. a plurality of growth crucibles;

B. a single replenishment crucible for said growth crucibles, physically distinct from said crucibles and within which a supply of said material can be melted and maintained in a molten condition;

C. means for feeding unmelted semiconductor material to said replenishment crucible, located at a stationary position relative to said replenishment crucible; and

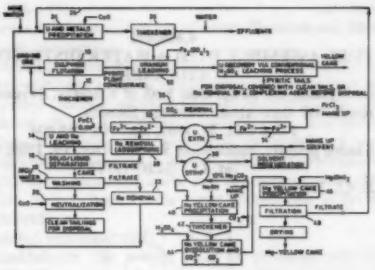
D. means for moving said replenishment crucible between the locations of each of said growth crucibles to position said replenishment crucible for the flow of said material from said replenishment crucible separately to each of said growth crucibles; wherein a separate isolation chamber is provided for said replenishment crucible and for each of said growth crucibles for maintaining the molten material therein isolated from the ambient atmosphere; and said means for communicating said growth and replenishment crucibles includes a conduit extending outwardly from said replenishment crucible into a sleeve of its associated isolation chamber, which sleeve encompasses said conduit when said conduit is not in communication with a growth crucible, is connectable to an isolation chamber enclosing a growth crucible, and is axially collapsible to permit the projection of said conduit into said growth crucible chamber to the location therein of said crucible for said communication.

4,454,097

PROCESS OF EXTRACTING BOTH URANIUM AND RADIUM FROM URANIUM-CONTAINING ORES

Inderjit Nirdosh, 494 Ryerson Crescent, Thunder Bay, Ontario, Canada P7C 5R8; Malcolm H. Baird, 139 Old Ancaster Rd., Dundas, Ontario, Canada (L9H 3R3); Sanjoy Banerjee, 891 Jimeno Rd., Santa Barbara, Calif. 93103, and Sirugamani V. Muthuswami, 111 Clydesdale Dr., Willowdale, Ontario, Canada (M2J 3N3)

Filed Oct. 21, 1982, Ser. No. 435,858
Int. Cl.³ C01G 43/00; C01F 13/00
U.S. Cl. 423—8 **10 Claims**



1. A process for the extraction of both uranium and radium from difficultly-leachable low grade uranium ores in the presence of an an interfering sulphate ion resulting from the presence of sulphide therein by use of an aqueous ferric chloride leachant including the steps of:

(a) mechanically treating the finely ground ore for the removal of sulphide therefrom;

(b) leaching the mechanically treated finely ground ore with aqueous acidic ferric chloride solution in a concentration from 0.05M to 0.2M for the removal of uranium and radium therefrom to result in a liquid ferric chloride leachate containing radium and uranium and a wet cake containing retained ferric chloride with uranium and radium dissolved therein;

(c) treating the ferric chloride leachate to separate the uranium and radium therefrom;

(d) separately treating the wet cake for removal of retained ferric chloride and the dissolved uranium and radium therefrom; and

(e) recycling the ferric chloride leachate from step (c) for the leaching of more of the mechanically treated finely ground ore.

4,454,098

PROCESS FOR RECLAIMING TUNGSTEN FROM A HAZARDOUS WASTE

Richard A. Scheithauer; Clarence D. Vanderpool; Michael J. Miller, and Martin B. MacInnis, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 1, 1983, Ser. No. 556,765
Int. Cl.³ C01G 41/00
U.S. Cl. 423—55 **6 Claims**

1. A process for treating hazardous material containing tungsten, arsenic, magnesium, silicon, and other elements to recover said tungsten and to render the remaining material nonhazardous with respect to arsenic, said process comprising:

(a) digesting said material in an aqueous solution of an alkali metal hydroxide, at a pH of from about 10.0 to about 13.0, for a sufficient period of time to produce a digestion solution containing about 80% to about 100% of said tungsten, and an insoluble material containing arsenic in an amount sufficient to render said insoluble material hazardous,

(b) adjusting the pH of said digestion solution to about 9.5 to

about 10.0 to form a two phase system consisting of a solid phase and a liquid phase wherein essentially all of said magnesium and said silicon, and a portion of said arsenic are in said solid phase, and a major portion of the tungsten and the remainder of said arsenic are in said liquid phase,

(c) separating said solid phase from said liquid phase,

(d) adding to said solid phase an amount of water sufficient to form an aqueous slurry

(e) adding to the resulting slurry an aqueous solution of a ferric salt in an amount sufficient to give about 0.5 to about 3.0 moles of Fe to 1 mole of As,

(f) stirring the resulting mixture for about 20 to about 60 minutes to produce a solid nonhazardous material from said resulting mixture.

4,454,099

SORBENT BASES TREATED WITH ORGANIC HALIDES AND THEIR USE TO REMOVE ACIDIC SUBSTANCES FROM GAS MIXTURES

Arlo J. Moffat, Dewey, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1982, Ser. No. 375,528

Int. Cl.³ B01D *53/34;* **C09K** *3/00*

U.S. Cl. 423—210 **15 Claims**

11. A process of removing one or more noxious acidic substances from a gas comprising, contacting the gas with a pretreated sorbent which sorbent is produced by treating a sorbent base selected from the group consisting of alkali and alkaline earth metal oxides, hydroxides, carbonates, and bicarbonates with a treating agent comprising one or more organic halides under conditions sufficient to saturate said sorbent base with organic halide.

4,454,100

CONDENSATION PROCESS FOR SEPARATING AIR POLLUTANTS FROM WASTE GASES, AND SPECIFICALLY FROM FLUE GASES

Otto Faatz, Salzgitter, Fed. Rep. of Germany, assignor to Toschi Produktions-GmbH, Bremen, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,414

Claims priority, application Fed. Rep. of Germany, May 5, 1982, 3017133; Oct. 12, 1982, 3237699

Int. Cl.³ B01D *47/00;* **B01J** *8/00;* **C01B** *21/00, 17/00*

U.S. Cl. 423—210 **11 Claims**

1. A condensation process for separating air pollutants from waste gases, and especially from flue gases, said pollutants including at least one member selected from the group consisting of sulfur oxides, nitrogen oxides and heavy metals, comprising the steps of

adjusting the waste gases to a temperature of about 72°–100° C. with a water vapor content of about 30 to 400 g/m³,

thereafter, and at a pressure of about 0.5 to 2.5 bars, mixing an aqueous oxidizing agent which reacts with at least one of said pollutants to form a liquid state acid with the waste gases in a quantity such that, based on the either nitrogen oxide or sulfur content or both of the waste gases, a stoichiometric ratio of $\lambda=0.8$ to 2.0 is obtained,

drawing off the liquid state acid formed in the mixing step, and

thereafter cooling the waste gases in at least one further stage below the saturation point of the water vapor, thereby permitting the condensate with pollutants at each stage to be drawn off, and the purified gas vented to atmosphere.

4,454,101

DEWATERING OF FLUE GAS DESULFURIZATION SULFITE SOLIDS

Forrest C. Garrison, Chattanooga, Tenn., and William L. Wells, Champaign, Ill., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 444,127, Nov. 24, 1982, Pat. No. T103,501. This application Jun. 29, 1983, Ser. No. 508,969

Int. Cl.³ C01B *17/00, 17/45, 17/62*

U.S. Cl. 423—242 **12 Claims**

1. In an improved process for the removal of SO_2 from an input gas stream containing SO_2 wherein the input gas stream is contacted, in a gas-liquid scrubbing zone, with an aqueous scrubbing slurry containing an alkaline reagent wherein said alkaline reagent contained in said scrubbing slurry is selected from the group consisting of lime, limestone, or mixtures thereof at scrubbing conditions selected to form a resulting treated gas stream containing substantially less SO_2 than said input gas stream and a resulting SO_2 enriched scrubbing slurry containing as a substantial portion of the solids therein calcium sulfite hemihydrate; subsequently effecting at least a partial dewatering of said SO_2 enriched scrubbing slurry; and removing the resulting at least partially dewatered sludge to waste disposal; the improvement in combination therewith for substantially increasing the yield of solids in said dewatered sludge to thereby render same eminently suitable for use in solid landfill waste disposal operations, which improved process comprises adding to and maintaining in said aqueous scrubbing slurry from about 250 ppm to about 2500 ppm of thiosulfate ion, said improved process characterized by the fact that the addition and maintenance of said amounts of thiosulfate ion in said aqueous scrubbing slurry is sufficient to effect therein a crystal habit of the calcium sulfite hemihydrate comprising a substantial portion of the solids therein in a tabular prismatic mode and substantially eliminates therein the occurrence of porous lamellar aggregates of randomly oriented micaceous crystallites of said calcium sulfite hemihydrate, thereby altering the agglomerative characteristics of said crystallites in the spent slurry removed from said gas-liquid scrubbing zone to a mode which substantially increases the settling rate thereof and results in the ultimate dewatering of said sludge up to the range of about 80 to 90 percent solids by weight.

4,454,102

METHOD OF PURIFYING FLUE GASES FROM SULPHUR DIOXIDE

Leif V. Lindau, and Stefan O. H. Ahman, both of Växjö, Sweden, assignors to Flakt Aktiebolag, Nacka, Sweden

Filed Sep. 18, 1981, Ser. No. 303,462

Int. Cl.³ B01J *8/00;* **C01B** *17/00*

U.S. Cl. 423—244 **7 Claims**

1. A method for purifying a gas containing sulphur dioxide components therein, which method comprises contacting said gas with a mixture consisting of (i) a solid absorbent and (ii) a liquid, hydrous phase, which liquid phase is derived from a hygroscopic salt selected from the group consisting of $FeCl_3$, $Fe(NO_3)_3$, $Fe(NO_3)_2$, $Al(NO_3)_3$, $Ca(NO_3)_2$, $Mg(ClO_3)_2$, $MnCl_2$, $K_2SO_4.MgSO_4$, $NaAl(SO_4)_2$, NaClO, Na_3PO_4, Na_2SiO_3, Na_2SO_4, and $Zn(NO_3)_2$ which hygroscopic salt is thermodynamically stable at the prevailing water partial pressure and temperature of said gas and which at least partly covers said solid absorbent, and preparing said mixture by adding to said solid absorbent said hygroscopic salt.

4,454,103
HIGH ACID MONOCALCIUM PHOSPHATE AND PROCESS FOR PREPARING THE SAME

Robert E. Benjamin, and Thomas E. Edging, both of Nashville, Tenn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 370,302, Apr. 21, 1982, abandoned. This application Jul. 20, 1983, Ser. No. 515,883

Int. Cl.³ C01B *25/32*

U.S. Cl. 423—309 **9 Claims**

7. A method for preparing a high acid monocalcium phosphate which comprises mixing ortho phosphoric acid with an amount of lime sufficient to neutralize from 90% to 99% of the phosphoric acid thereby forming a product having excess phosphoric acid, controlling the reaction conditions to maintain a reaction temperature between about 140° C. but below a temperature at which substantial amounts of pyrophosphate will form, continuing the reaction until a substantially dry mass of solid anhydrous monocalcium phosphate having a loss on ignition at 800° C. of between from about 16% but less than about 18.5% is produced.

4,454,104
PROCESS FOR WORKING UP THE RESIDUAL GASES OBTAINED IN THE DEPOSITION OF SILICON AND IN THE CONVERSION OF SILICON TETRACHLORIDE

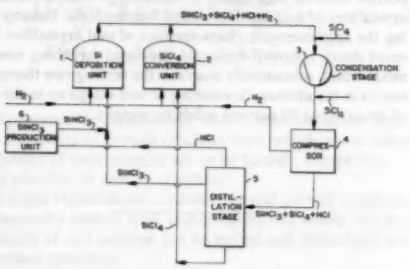
Rudolf Griesshammer; Franz Köppl, both of Altötting; Helmut Lorenz, and Friedrich Steudten, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 404,983

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 3139705

Int. Cl.³ C01B *33/02*

U.S. Cl. 423—349 **10 Claims**



1. A process for working up residual waste gases containing chlorosilanes, silicon tetrachloride, hydrogen and hydrogen chloride, comprising the steps of:

condensing out in liquid form silicon tetrachloride, hydrogen chloride and the chlorosilanes contained in said residual gases so as to produce a condensate containing chlorosilanes, silicon tetrachloride and hydrogen chloride dissolved in said silicon tetrachloride; and

collecting said hydrogen chloride dissolved in said silicon tetrachloride and removing said hydrogen choride from said silicon tetrachloride.

4,454,105
PRODUCTION OF (MO,W) C HEXAGONAL CARBIDE

Tsuguyasu Wada, and Evan K. Ohriner, both of Ann Arbor, Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Oct. 5, 1982, Ser. No. 432,630

Int. Cl.³ C01B *31/34*

U.S. Cl. 423—440 **11 Claims**

1. A process for the production of a homogeneous solid-solution of molybdenum and tungsten which comprises: mixing finely divided oxides of molybdenum and tungsten to provide a molybdenum to tungsten atom ratio of between about 1:1 and about 10:1 and heating the mixture to a reducing temperature between about 1000° C. and about 1300° C. at a rate of at least about 20° C. per minute from about 650° C. to the reducing temperature in a hydrogen-containing atmosphere to provide a homogeneous solid solution of molybdenum and tungsten.

4,454,106
USE OF METAL CHELATE CONJUGATED MONOCLONAL ANTIBODIES

Otto A. Gansow, 3003 Van Ness, NW., Washington, D.C. 20008, and Mette Strand, 807 Harper House, Baltimore, Md. 21210

Filed Jun. 7, 1982, Ser. No. 386,109

Int. Cl.³ G01N *33/60*; A61K *43/00, 49/02*

U.S. Cl. 424—1.1 **21 Claims**

15. An in vivo diagnostic method comprising introducing into body fluid a solution of metal diethylenetriaminepentaacetic acid chelate conjugated monoclonal antibodies wherein said metal is selected from the group consisting of paramagnetic metals, gamma emitting metals and positron emitting metals, at least about 94% of said metal is bound by said chelate, and said conjugate has at least about 80% of the biological activity and selectivity of the antibody.

18. An in vitro diagnostic method comprising introducing into a test medium a solution of metal diethylenetriaminepentaacetic acid chelate conjugated monoclonal antibodies and quantifying the specifically bound portion of said conjugate, said metal being selected from the group consisting of fluorescent metals, paramagnetic metals, gamma emitting metals, positron emitting metals and beta emitting metals, at least about 94% of said metal being bound by said chelate, and said conjugate having at least about 80% of the biological activity and specificity of the antibody.

4,454,107
TC99M-PHENIDA, RADIOSCINTIGRAPHIC AGENT FOR DIAGNOSIS OF HEPATONILIARY DISEASE

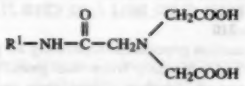
Richard E. Rolleston, Dollard des Ormeaux, Canada, assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 30, 1982, Ser. No. 412,747

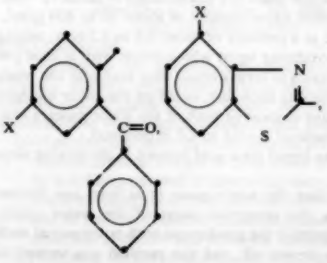
Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **12 Claims**

1. An imino-diacetic acid compound of the formula:



wherein R^1 is selected from the group consisting of:



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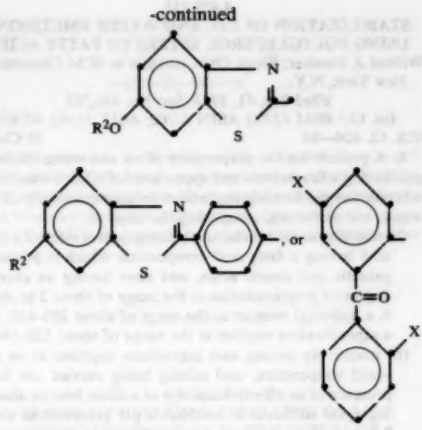


wherein X is halo and R^2 is loweralkyl of from 1–5 carbon atoms.

8. A molecular complex comprising a mixture of technetium 99m, a compound of claim 1 and a water soluble stannous salt.

12. A method for imaging the hepatobiliary system which comprises the intravenous administration of a sterile solution of a molecular complex of claim 8.

4,454,108

PROLONGED-ACTION MULTIPLE-LAYER TABLETS

Yoshimitsu Iida, Saitama; Atsuko Yoshizawa, Tokyo; Tatuo Kujirai, Saitama, and Toshichika Ogasawara, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 412,074
Claims priority, application Japan, Sep. 4, 1981, 56-138339
Int. Cl.³ A61K *9/24, 9/28, 9/42*
U.S. Cl. 424—16 **9 Claims**

1. A prolonged-action multiple-layer tablet having an increased rate of dissolution of the active ingredient from a given point of time onward, comprising

an inert layer A made of an intimate mixture of a water-insoluble wax that has an average particle size of 10 μm or less and which is solid at ordinary temperatures, selected from the group consisting of hydrogenated castor oil, hydrogenated soybean oil, carnauba wax, paraffin, palmitic acid, stearic acid, bees wax, stearyl alcohol, and octadecyl alcohol,

a disintegrator selected from the group consisting of low-substituted hydroxypropyl cellulose, carboxymethyl cellulose, calcium carboxymethyl cellulose, sodium carboxymethyl cellulose, corn starch, sodium starch glycolate and hydroxypropyl starch,

and a binder selected from the group consisting of hydroxypropyl cellulose, hydroxypropylmethyl cellulose, hydroxypropylmethyl cellulose phthalate, gelatin, α-starch, polyvinyl pyrrolidone and polyethylene glycol; and

layer B made of an intimate mixture of a said water-insoluble wax that has an average particle size of 10 μm or less and which is solid at ordinary temperatures, a said disintegrator, a said binder and the active ingredient and wherein layer B covers part of layer A, and layer A covers part of layer B.

4,454,109

METHOD OF TREATING PERIODONTOSIS

Jeffrey D. Hillman, Boston, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Continuation-in-part of Ser. No. 235,130, Feb. 17, 1981, abandoned. This application Mar. 11, 1982, Ser. No. 357,167
Int. Cl.³ A61K *7/16, 7/20, 33/40, 39/09*
U.S. Cl. 424—50 **12 Claims**

1. A method of treating periodontal disease caused by the etiological agent *Actinobacillus actinomycetemcomitans* in the oral cavity of a patient affected therewith, which method comprises:

introducing into the oral cavity an effective amount of a micro-organism hydrogen peroxide generating effector strain selected from the group consisting of *Streptococcus sanguis*, and Strep. uberis to inhibit the growth of *Actinobacillus actinomycetemcomitans*.

4,454,110

SELF-GELLING LIQUID COMPOSITION FOR TOPICAL APPLICATION IN THE ORAL CAVITY

Véra B. Cáslavsk/ , Lexington; Poul Gron, Needham, both of Mass., and Howard Fine, Montreal, Canada, assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Division of Ser. No. 381,530, May 24, 1982, Pat. No. 4,411,889. This application Aug. 1, 1983, Ser. No. 518,951
Int. Cl.³ A61K *7/16, 7/18, 7/22, 31/71*
U.S. Cl. 424—54 **8 Claims**

1. A self-gelling, drug-containing aqueous liquid composition for topical application in periodontal pockets and areas in the oral cavity to prevent periodontal diseases, which composition comprises:

(a) solution of an ethyl orthosilicate, which solution contains from about 5 to 30 percent by weight of the ethyl orthosilicate;

(b) a drug compound effective in the treatment of periodontal diseases wherein the drug is selected from the group consisting of tetracycline, erythromycin and chlorhexidine in an amount of from about 0.05 to about 20 percent by weight of the composition;

(c) a surface-active gelling agent in an amount of from about 0.01 to 2 percent by weight of the composition; and

(d) the composition characterized by being a low-viscosity aqueous liquid solution having a pH of from about 3 to 8.5 which, after mixing and on topical application of the liquid into the oral cavity of a patient, gels in situ to a gel state in a time period of from about one hour or less,

thereby providing a solution which more readily will enter into the periodontal pockets and narrow spaces between the teeth and into conformity with the teeth surface and forming a gel state, to provide for the sustained release of the drug into the periodontal pockets and areas in the oral cavity.

4,454,111

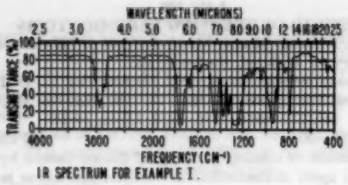
PRENYL METHYL CARBONATE AND ORGANOLEPTIC USES THEREOF

Richard M. Boden, Ocean; Manfred H. Vock, Locust, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

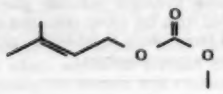
Division of Ser. No. 430,947, Sep. 30, 1982, Pat. No. 4,420,472. This application Sep. 1, 1983, Ser. No. 528,545
Int. Cl.³ A61K *7/16, 7/26, 9/68, 1/235*
U.S. Cl. 424—58 **2 Claims**

1. A toothpaste comprising a toothpaste base and having intimately admixed therewith a formulation capable of augmenting or enhancing the organoleptic properties of aroma and taste of said toothpaste base comprising:

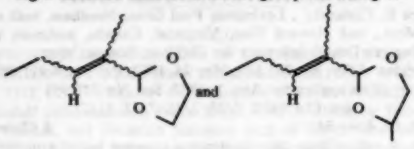
(i) from about 0.1% up to about 15% by weight based on the total weight of flavoring composition of a mixture of prenyl methyl carbonate defined according to the structure:



IR SPECTRUM FOR EXAMPLE I.



and at least one cyclic acetal of 2-methyl-2-pentenal having a structure selected from the group consisting of:


and

and

(ii) the remainder of said composition being a material selected from the group consisting of:

oil of cubeb;
phellandrene;
oil of coriander;
clove oil;
cardamom oil;
spearmint oil;
anethol;
peppermint oil;
oil of pimento leaf;
oil of patchouli;
alpha-pinene;
beta-pinene;
beta-caryophyllene;
dihydrocarveol;
piperonal;
piperine;
chavicine;
piperidine;
oil of black pepper;
black pepper oleoresin;
capsicum; and
oil of nutmeg.

4,454,112

SUNSCREEN COMPOSITION CONTAINING TOCOPHEROL ACETYLSALICYLATE

Francis W. Tuominen, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 865,081, Dec. 27, 1977, abandoned. This application Mar. 16, 1982, Ser. No. 358,557

Int. Cl.³ A61K *7/44*

U.S. Cl. 424—60 **2 Claims**

1. A method of reducing the amount of ultraviolet radiation receiving the skin which includes contacting the skin with an effective amount of tocopherol acetylsalicylate to reduce the amount of the ultraviolet radiation reaching the skin.

2. A sunscreen composition containing 1% tocopherol acetylsalicylate, 10% oleyl alcohol, and 89% mineral oil.

4,454,113

STABILIZATION OF OIL AND WATER EMULSIONS USING POLYGLYCEROL ESTERS OF FATTY ACIDS

Wilfred J. Hemker, Berea, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Sep. 21, 1982, Ser. No. 420,768

Int. Cl.³ B01J *13/00*; A01N *61/02*; A61K *31/00, 47/00*

U.S. Cl. 424—63 **15 Claims**

1. A process for the preparation of oil and water emulsion gels having a firm texture and appearance of oil-rich emulsions, wherein the gel-forming ingredients consist essentially of oil, water, and surfactant, comprising the steps of;

(a) selecting as said surfactant a polyglycerol ester of a fatty acid having a fatty acid composition which is primarily palmitic and stearic acids, said ester having an average degree of polymerization in the range of about 2 to about 6, a hydroxyl number in the range of about 280–425, and a saponification number in the range of about 120–140;

(b) intensively mixing said ingredients together at an elevated temperature, said mixing being carried out in th presence of an effective amount of a dilute base or alkalizing agent sufficient to establish a pH greater than about 7.0; said mixing producing a smooth, stable, fluid emulsion of fine particle size;

(c) then acidifying the emulsion of step (b) to a lower pH in the range of about 5 to 7.5 to form said gel.

4,454,114

QUATERNARY, COPOLYMERIC, HIGH MOLECULAR WEIGHT AMMONIUM SALTS BASED ON ACRYLIC COMPOUNDS, AND THEIR USE IN COSMETICS FOR THE HAIR

Dieter Strasilla, Weil am Rhein, Fed. Rep. of Germany; Hubert Meindl, Riehen, Switzerland; Laszlo Moldovanyi, Basel, Switzerland, and Charles Fearnley, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

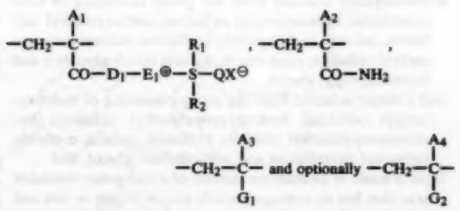
Division of Ser. No. 286,920, Jul. 27, 1981, Pat. No. 4,419,344. This application Sep. 28, 1982, Ser. No. 425,597

Claims priority, application Switzerland, Aug. 1, 1980, 5876/80

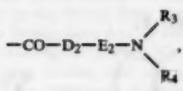
Int. Cl.³ A61K *7/06, 7/08*

U.S. Cl. 424—70 **14 Claims**

12. A method of hair treatment to give ease of wet and dry combing which comprises the step of applying a cosmetic which contains at least one copolymeric, quaternary ammonium salt which is soluble or forms a microemulsion in an aqueous surfactant system, which has a molecular weight distribution of 10^4 to 10^9, the molecular weight of at least 5 percent by weight of the copolymer being 10^7 and 10^9, and comprises, in any order, recurring structural elements of the formulae


and optionally

in which A_1, A_2, A_3 and A_4 are each hydrogen or methyl, G_1 and G_2 differ from one another and are each 13 CN, —COOH or



D_1 and D_2 are each oxygen or —NH—, E_1 and E_2 are each alkylene having 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxyl, R_1, R_2, R_3 and R_4 are each methyl or ethyl, Q is alkyl or hydroxyalkyl having 1 to 4 carbon atoms or benzyl and $X^{\ominus}$ is the radical of at least one anionic sulfate ether surfactant.

4,454,115

METHOD OF REDUCING THE LEVEL OF LOW DENSITY LIPOPROTEINS IN THE SERUM OF A PATIENT

Ernest C. Borden, and Earl S. Shrago, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 23, 1981, Ser. No. 314,449
Int. Cl.³ A61K *45/02*
U.S. Cl. 424—85 **9 Claims**

1. A method for reducing the level of low density lipoproteins in the serum of a patient which comprises, administering human fibroblast interferon to the patient in an amount sufficient to lower the level of said low density lipoproteins.

8. A method for treating arteriosclerosis in a patient, comprising, administering to said patient human fibroblast interferon in an amount sufficient to lower the level of low density lipoproteins in the patient's serum without lowering the level of high density lipoproteins in the patient's serum.

4,454,116

IMMUNIZATION OF HUMANS AGAINST ENTEROTOXOGENIC INFECTION BY *ESCHERICHIA COLI*

Charles C. Brinton, Pittsburgh, Pa., assignor to Bactex, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 854,343, Nov. 23, 1977, Pat. No. 4,237,115. This application Sep. 15, 1980, Ser. No. 187,051
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ A61K *39/108, 39/00*
U.S. Cl. 424—92 **4 Claims**

1. A method of protecting human subjects against colibacillosis caused by a member of a predetermined first group of strains of piliated *E. coli* which comprises administering to a subject in need of protection a composition capable of raising the antibody level of a human subject to a level sufficient to provide protection against infection caused by a member of a first group of strains of piliated *E.coli* comprising

pili previously separated from other *E.coli* organism components derived from at least one member selected from a second group consisting of strains of piliated *E. coli* organisms having Type 1 pili and those having NMS pili wherein cells of organisms of said first group are agglutinable by serum containing antibodies against pili from said second group, said first group consisting of strains which may be the same as or different from the strains of said group.

4,454,117

IMMUNIZATION AGAINST INFECTION BY *ESCHERICHIA COLI*

Charles C. Brinton, Pittsburgh, Pa., assignor to Bactex, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 187,051, Sep. 15, 1980, which is a continuation-in-part of Ser. No. 854,343, Nov. 23, 1977, Pat. No. 4,237,115. This application Sep. 13, 1982, Ser. No. 417,464
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ A61K *39/108, 39/02*
U.S. Cl. 424—92 **9 Claims**

1. A method of protecting subjects susceptable thereto against colibacillosis caused by a member of a predetermined first group of strains of piliated *E. coli* having type 1 pili or NMS pili which comprises administering to a subject in need of protection.

(a) pili derived from at least one member of a second group of strains of piliated *E. coli* organisms selected from the group of organisms having Type 1 pili and those having NMS pili wherein cells of organisms of said first group are agglutinable by serum containing antibodies against pili from said second group, said first group consisting of strains which may be the same as or different from the strains of said second group.

5. A vaccine composition capable of raising the antibody level of a subject susceptable to Coli bacillosis to a level sufficient to provide protection against infection caused by a member of a first group of strains of piliated *E. coli* comprising:

(a) pili derived from at least one member of a second group of strains of piliated *E. coli* organisms selected from the group of organisms having Type 1 pili and those having NMS pili wherein cells of organisms of said first group are agglutinable by serum containing antibodies against pili from said second group, said first group consisting of strains which may be the same as or different from the strains of said second group, and a pharmaceutically acceptable vaccine carrier.

4,454,118

METHOD OF TREATING PSORIASIS

Zelma M. Johnson, 1574 Beupre, Madison Heights, Mich. 48071

Continuation-in-part of Ser. No. 849,304, Nov. 7, 1977, abandoned. This application Dec. 9, 1981, Ser. No. 328,866
Int. Cl.³ A61K *33/22, 35/12, 35/56*
U.S. Cl. 424—95 **7 Claims**

1. A method of treating psoriatic conditions which comprises topically applying an effective amount of a composition consisting essentially of an admixture of lanolin, petrolatum, glycerine and cocoa butter to the skin of a psoriatic subject, the admixture being in a respective ratio of 1:1:1.5:0.25.

4,454,119

THERAPEUTIC AGENTS

Kazue Fukushi, Hirosaki, Japan, assignor to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,712
Int. Cl.³ A61K *31/00*
U.S. Cl. 424—170 **14 Claims**

1. A therapeutic agent comprising an oil-in-water suspension of (A) an alkali treated lipopolysaccharide from gram negative bacteria and (B) a cord factor of acid fast bacteria or its similar substance of corynebacteria, the proportions of (A) to (B) being 20:1 to 1:2 by weight.

4,454,120

ANALGESIC DIPEPTIDE AMIDES AND METHOD OF USE AND COMPOSITIONS THEREOF

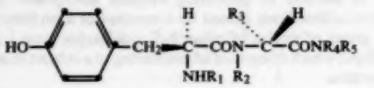
Barry A. Morgan, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 286,672, Jul. 24, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,055

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **39 Claims**

1. 2-(L-N^2-R_1-N-R_2-tyrosylamino)-2-R_3-N-R_4-N-R_5-acetamide having the structural formula



wherein

R_1 is hydrogen, alkyl of one to five carbon atoms, allyl, cyclopropylmethyl, formyl, acetyl or propionyl;

R_2 is hydrogen or alkyl of one to five carbon atoms;

R_3 is $(CH_2)_mX$ wherein m is an integer from 1 through 4 and X is amino, methylamino, dimethylamino, dimethyloxoamino, acetamido, N-methylacetamido, methylthio, methylsulfinyl, methylsulfonyl, hydroxy, carboxy, carbamoyl, methylcarbamoyl, dimethylcarbamoyl, phenyl or phenyl substituted by fluoro, chloro, methyl, methoxy or trifluoromethyl;

R_4 is $(CH_2)_nY$, wherein n is an integer from 2 through 10 and Y is phenyl or phenyl substituted by fluoro, chloro, methyl, methoxy or trifluoromethyl; and

R_5 is hydrogen, alkyl of one to five carbon atoms, or is selected from the group consisting of $(CH_2)_mX$ as defined for R_3 and $(CH_2)_nY$ as defined for R_4;

or a pharmaceutically acceptable acid addition salt thereof.

4,454,121

SYNTHETIC PEPTIDES CORRESPONDING TO ANTIGENIC DETERMINANTS OF THE M PROTEIN OF *STREPTOCOCCUS PYOGENES*

Edwin H. Beachey, Memphis, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Jul. 27, 1982, Ser. No. 402,355

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **12 Claims**

1. A synthetic polypeptide having the following amino acid sequence:

Asn-Phe-Ser-Thr-Ala-Asp-Ser-Ala-Lys-Ile-Lys-Thr-Leu-Glu-Ala-Glu-Lys-Ala-Ala-Leu-Ala-Ala-Arg-Lys-Ala-Asp-Leu-Glu-Lys-Ala-Leu-Glu-Gly-Ala-Met.

4,454,122

ADENOSINE DERIVATIVES OF ANTI-INFLAMMATORY AND ANALGESIC ACTIVITY, AND THERAPEUTIC COMPOSITIONS WHICH CONTAIN THEM AS THEIR ACTIVE PRINCIPLE

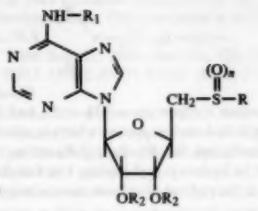
Giorgio Stramentinoli, and Federico Gennari, both of Milan, Italy, assignors to Bioresearch S.r.l., Milan, Italy

Division of Ser. No. 257,969, Apr. 27, 1981, Pat. No. 4,373,097. This application Aug. 6, 1982, Ser. No. 406,010

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **3 Claims**

1. A method of treating a patient to relieve inflammation, pain or fever comprising administering to said patient an anti-inflammatorily, analgesically or antipyretically effective amount of a compound of the formula



(I)

in which:

R is a linear or branched alkyl radical of 1–18 C atoms, or phenylalkylene in which the alkylene chain has 1–6 C atoms,

R_1 is H, an aliphatic acyl radical of 1–6 C atoms or an aromatic acyl radical,

R_2 is H, an aliphatic acyl radical of 1–6 C atoms or an aromatic acyl radical, or alternatively the radicals R_2 together form an isopropylidene chain

n is 0 or 1.

4,454,123

O-XYLOPYRANOSIDE SERIES COMPOUNDS AND METHODS OF USE

Ryoji Noyori, Aichi; Sakaru Suzuki; Minoru Okayama, both of Nagoya; Katukiyo Sakurai, Takahagi; Shigeyoshi Kamohara, Akigawa, and Yoshio Ueno, Kodaira, all of Japan, assignors to Seikagaku Kogyo Co. Ltd., Tokyo, Japan

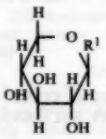
Continuation-in-part of Ser. No. 326,502, Dec. 2, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 472,786

Claims priority, application Japan, Dec. 9, 1980, 55-172625; May 1, 1981, 56-65226; May 1, 1981, 56-65227; Sep. 14, 1981, 56-144001; Nov. 4, 1981, 56-175772

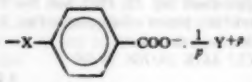
Int. Cl.³ C07H *15/18, 15/04, 5/06;* **A61K** *31/70*

U.S. Cl. 424—180 **6 Claims**

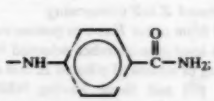
1. A D-xylopyranoside series compound of the formula:



in which R^1 is selected from the group consisting of



wherein X is selected from the group consisting of oxygen, sulfur and a methylene group; y is selected from the group consisting of hydrogen, lithium, sodium, potassium, magnesium, calcium and aluminum; and p represents the valency of an atom represented by Y;



—S—R^2 wherein R^2 is selected from the group consisting of a straight-chain alkyl group having from 9 to 25 carbon atoms, a branched alkyl group having from 3 to 25 carbon atoms, a straight-chain alkenyl group having 3 to 25 carbon atoms, a

branched alkenyl group having from 3 to 25 carbon atoms, a straight-chain alkynyl group having 3 to 25 carbon atoms and a branched alkynyl group having from 3 to 25 carbon atoms; and an alkyl group having from 6 to 25 carbon atoms.

5. A method of reducing the quantity of proteoglycan in cell membranes comprising treating said cell membranes with an effective amount of the compound of claim 1.

4,454,124

BIOLOGICALLY ACTIVE EXTRACTS FROM *CERASTIUM VISCUSUM* L. (CORYOPHYLLACEAE) MISSISSIPPI AND METHOD OF OBTAINING SAME

Sidney M. Hecht, Charlottesville, Va., assignor to WOFOR AG, Giswil, Switzerland

Continuation of Ser. No. 280,078, Jul. 2, 1981, abandoned. This application Feb. 18, 1983, Ser. No. 467,767

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **13 Claims**

1. Biologically active materials from the plant *Cerastium viscusum* L., Coryophyllaceae, Mississippi, the materials being produced by the process comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to about 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, and a fourth solvent having a dielectric constant at 25° C. of about 78, each extraction step being conducted for a period of 1 to 10 days, all extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

4,454,125

DRY POWDER FORMULATIONS HAVING IMPROVED FLOW AND COMPRESSIBILITY CHARACTERISTICS, AND METHOD FOR THE PREPARATION THEREOF

Harry B. Demopoulos, 24 Sycamore Rd., Scarsdale, N.Y. 10583

Filed Apr. 22, 1982, Ser. No. 371,003

Int. Cl.³ A61K *31/68, 31/365, 31/525, 31/51*

U.S. Cl. 424—201 **6 Claims**

1. In a dry powder, multi-vitamin encapsulation formulation, the improvement comprising the use of a lubricant consisting essentially of crystalline ascorbic acid or a crystalline physiologically acceptable ascorbate salt having particle sizes passing from 200 to 10 mesh screens, in an amount of from 5–90% by weight of said formulation.

4,454,126

PHOSPHORAMIDE DERIVATIVES AND MEDICINES CONTAINING THE SAME

Isao Yamatsu, Ushikumachi; Yuichi Inai, Tokyo; Takeshi Suzuki, Ushikumachi; Shinya Abe, Kukizaki; Masaru Satoh, Sakura, and Naosuke Seto, Ichikawa, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

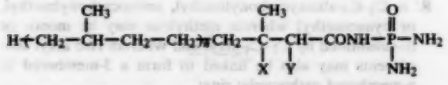
Filed Oct. 15, 1982, Ser. No. 434,454

Claims priority, application Japan, Oct. 19, 1981, 56-165669

Int. Cl.³ C07F *9/02, 9/22*; A61K *31/66*

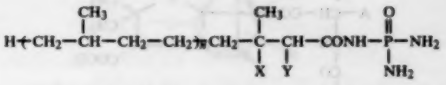
U.S. Cl. 424—212 **11 Claims**

1. A compound having the formula:



wherein X and Y each represents hydrogen or X and Y together form a valence bond between the two adjacent carbon atoms to which they are respectively attached, and n represents an integer of 0 to 2.

8. A pharmaceutical composition for the treatment of urethral calculosis comprising an effective amount of a phosphoramide derivative of the formula:



wherein X and Y each represents hydrogen or X and Y together form a double bond between the two adjacent carbon atoms to which they are respectively attached, and n represents an integer of 0 to 2, as an active ingredient, and a pharmaceutically acceptable carrier.

4,454,127

INSECTICIDAL PYRETHROID COMPOSITIONS

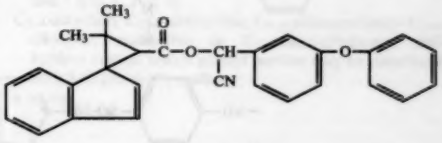
James B. Lovell, Pennington, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 103,897, Dec. 17, 1979, abandoned, which is a continuation of Ser. No. 874,305, Feb. 2, 1978, abandoned, which is a division of Ser. No. 623,864, Oct. 20, 1975, Pat. No. 4,087,523. This application Nov. 22, 1982, Ser. No. 443,404

Int. Cl.³ A01N *37/34, 37/00*

U.S. Cl. 424—218 **6 Claims**

1. An insecticidal composition comprising (i) a phenoxybenzyl ester of a spirocarboxylic acid having a formula:



and (ii) O,O-dimethyl-O-p-nitrophenyl phosphorothioate and a diluent wherein the concentration of ester is from about 0.03 to 100 ppm and the concentration of phosphorothioate is from about 1 to 3 ppm.

4,454,128

6α-METHOXY-PENICILLINS

Bernd Wetzel; Wolfgang Eberlein; Günter Trummlitz; Eberhard Woitun; Roland Maier; Wolfang Reuter; Uwe Lechner, and Hanns Goeth, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

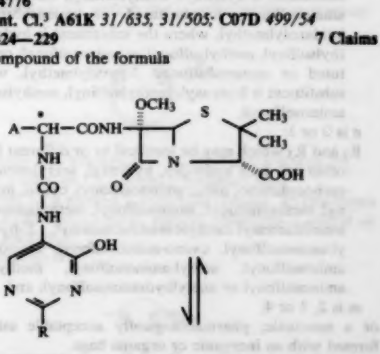
Filed Aug. 20, 1982, Ser. No. 410,007

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134776

Int. Cl.³ A61K *31/635, 31/505*; C07D *499/54*

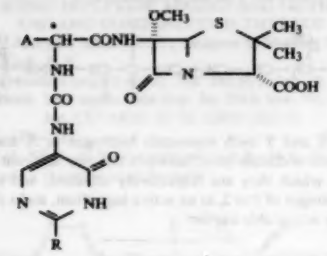
U.S. Cl. 424—229 **7 Claims**

1. A compound of the formula



or

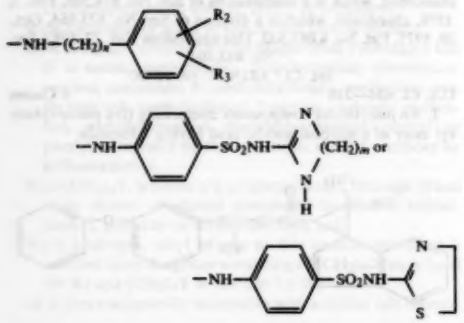
-continued



wherein

A is phenyl, p-hydroxy-phenyl, 2-thienyl or 3-thienyl; and

R is cyclopropyl, —NH—R_1,



R_1 is straight or branched aliphatic hydrocarbyl of 1 to 4 carbon atoms; straight or branched aliphatic hydrocarbyl of 2 to 4 carbon atoms hydroxy-substituted in 2-, 3- or 4-position; cycloalkyl of 3 to 6 carbon atoms; hydroxy-cycloalkyl of 3 to 6 carbon atoms; unsubstituted or mono-substituted 3-pyridyl, where the substituent is hydroxyl, methylsulfinyl, methylsulfonyl or aminosulfonyl; unsubstituted or monosubstituted 2-furylmethyl, where the substituent is hydroxyl, methylsulfinyl, methylsulfonyl or aminosulfonyl; unsubstituted or monosubstituted 2-thiazolylmethyl, where the substituent is hydroxyl, methylsulfinyl, methylsulfonyl or aminosulfonyl; unsubstituted or monosubstituted 2-thienylmethyl, where the substituent is hydroxyl, methylsulfinyl, methylsulfonyl or aminosulfonyl; unsubstituted or monosubstituted 3-imidazolylmethyl, where the substituent is hydroxyl, methylsulfinyl, methylsulfonyl or aminosulfonyl; or unsubstituted or monosubstituted 3-pyridylmethyl, where the substituent is hydroxyl, methylsulfinyl, methylsulfonyl or aminosulfonyl;

n is 0 or 1;

R_2 and R_3 which may be identical to or different from each other are each hydrogen, hydroxyl, acetylamino, aminocarbonylamino, nitro, aminocarbonyl, cyano, methylsulfinyl, methylsulfonyl, aminosulfonyl, methylaminosulfonyl, aminocarbonyl-methyleneaminosulfonyl, 2'-hydroxyethyl-aminosulfonyl, cyano-aminosulfonyl, aminocarbonyl-aminosulfonyl, acetyl-aminosulfonyl, methylsulfonyl-aminosulfonyl or acetylhydrazinosulfonyl; and

m is 2, 3 or 4;

or a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

6. An antibacterial pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antibacterial amount of a compound of claim 1.

4,454,129

CEPHEM DERIVATIVES

Burkhard Mencke, Idstein; Eberhard Ehlers, Hofheim am Taunus; Jürgen Blumbach, Frankfurt am Main; Walter Dürckheimer, Hattersheim am Main, and Karl Seeger, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

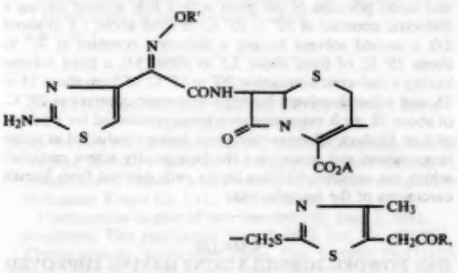
Filed Apr. 30, 1982, Ser. No. 373,790

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117438

Int. Cl.³ A61K *31/545*; C07D *501/56*

U.S. Cl. 424—246 8 Claims

1. A cephem compound of the formula



wherein

R is C_1–C_6-alkoxy or C_1–C_6-alkoxy substituted by hydroxyl, halogen, carboxyl, aminocarbonyl, C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy-C_1–C_4-alkoxy, phenyl, phenoxy, or phenyl or phenoxy mono- or poly-substituted by hydroxyl, C_1–C_4-alkoxy, halogen, carboxyl, C_1–C_4-alkoxycarbonyl, or aminocarbonyl, or wherein

R is C_2–C_6-alkenoxy, C_2–C_6-alkinoxy, C_3–C_6-cycloalkoxy, or C_2–C_6-alkenoxy substituted by phenyl or by phenyl mono- or polysubstituted by hydroxyl, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, carboxyl, C_1–C_4-alkoxycarbonyl or aminocarbonyl, or wherein

R is phenoxy or phenoxy mono- or polysubstituted by halogen, C_1–C_4-alkyl, hydroxyl, C_1–C_4-alkoxy, nitro, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, sulfo, aminocarbonyl, carboxyl, or C_1–C_4-alkoxycarbonyl, or wherein

R is phenyl-C_1–C_6-alkoxy wherein phenyl is mono- or polysubstituted by amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, or sulfo,

R' is C_1–C_4-alkyl, alkyl substituted by halogen, hydroxyl, or sulfo or wherein

R' is carboxymethyl wherein the carboxyl group may be present in the form of a physiologically acceptable salt or ester, or wherein

R' is C_1–C_4-alkoxycarbonylmethyl, aminocarbonylmethyl, or cyanomethyl wherein methylene may be mono- or di-substituted by C_1–C_4-alkyl and wherein two alkyl substituents may also be linked to form a 3-membered to 6-membered carbocyclic ring;

the group R'O— is in the syn position; and

A is hydrogen or a physiologically acceptable cation.

7. A pharmaceutically formulation comprising an anti-bacterially effective amount of a compound as in claim 1 and a pharmaceutically acceptable carrier thereof.

4,454,130

MORPHOLINO AND OXAZOLINE SUBSTITUTED CARBOSTYRIL DERIVATIVES, PROCESS FOR PRODUCING THE SAME AND CARDIOTONIC COMPOSITIONS CONTAINING THE SAME

Michiaki Tominaga; Yung-hsiung Yang; Hidenori Ogawa, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Japan

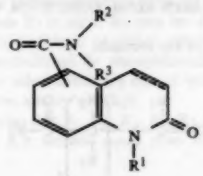
Division of Ser. No. 348,709, Feb. 16, 1982. This application Aug. 22, 1983, Ser. No. 525,812

Claims priority, application Japan, Feb. 17, 1981, 56-22437; Apr. 15, 1981, 56-57732; Aug. 12, 1981, 56-127145

Int. Cl.[3] **C07D** *413/12, 215/20;* **A61K** *31/47, 31/535*

U.S. Cl. 424—248.4 **2 Claims**

1. A carbostyril derivative or a pharmaceutically acceptable salt thereof) said derivative being represented by the formula (1),



(1)

wherein R^1 is a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a phenyl-lower alkyl group, R^2 and R^3 form, together with the adjacent nitrogen atom and further with an additional oxygen atom, a 5- or 6-membered saturated heterocyclic ring which may have a lower alkyl group or a phenyl-lower alkyl group as the substituent; the carbon-carbon bond between 3- and 4-positions in the carbostyril skeleton being a single or double bond.

4,454,131

THIOPHENE DERIVATIVES

Yojiro Hirota; Koichi Shinhama, both of Yamaguchi; Katsumi Sato, and Takuo Wada, both of Kanagawa, all of Japan, assignors to Ube Industries, Ltd., Japan and Hokko Chemical Industry Co., Ltd., Japan

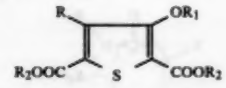
Filed Apr. 26, 1983, Ser. No. 488,684

Claims priority, application Japan, Apr. 30, 1982, 57-71293; Jul. 7, 1982, 57-116896; Jul. 7, 1982, 57-116897; Jul. 7, 1982, 57-116898; Feb. 8, 1983, 58-18069; Feb. 23, 1983, 58-27753

Int. Cl.[3] **A01N** *43/84, 43/02;* **C07D** *409/00, 413/00*

U.S. Cl. 424—248.51 **2 Claims**

1. A thiophene compound of the general formula (I)

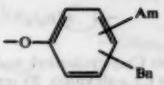


In the general formula:

R is C_{1-4}-alkyl; R_1 is

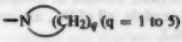
wherein R_3 is C_{1-4}-alkyl, halogen-substituted C_{1-4}-alkyl, C_{2-4}-alkenyl, C_{3-8}-cycloalkyl, C_{1-4}-alkoxy-C_{1-4}-alkyl, C_{1-4}-alkylthio-C_{1-4}-alkyl, C_{1-4}-alkoxycarbonyl-C_{1-4}-alkyl, C_{1-10}-alkoxy, C_{1-4}-alkynyloxy, styryl, α-phenoxyethyl, thienyl, furyl, 2,3-dibromopropyloxy,

a group



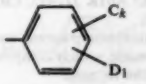
(wherein A and B individually are halogen, C_{1-4}-alkyl, methoxy or methylthio, and m and n individually are 0 or 1 with the proviso m+n cannot exceed (2), mono-C_{1-4}-alkylamino, di-C_{1-4}-alkylamino, mono-C_{3-8}-cycloalkylamino, monoaralkylamino, diphenylamino,

a group



which may be substituted with one or two C_{1-4}-alkyl;

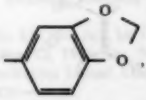
a group



(wherein C is a halogen atom, D is C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylcarboxy, nitro or cyano, k is 0, 1 or 2 and l is 0, 1, 2 or 3);

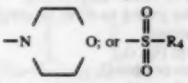
C_{1-4}-alkylthio; C_{1-4}-alkenylthio; C_{1-4}-alkoxycarbonyl-C_{1-4}-alkylthio; aralkylthio or C_{1-4}-alkyl-substituted aralkylthio; aralkyl which phenyl portion may be substituted with halogen or C_{1-4}-alkoxy;

a group

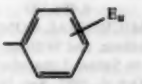


phenoxy-C_{1-4}-alkyl which phenyl portion may be substituted with halogen; pyridine-4-yl; or

a group



wherein R_4 is C_{1-6}-alkyl, di-C_{1-4}-alkylamino or a group

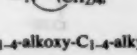


(in which E is halogen or C_{1-4}-alkyl and u is 0 or 1);

R_2 is C_{1-4}-alkyl or C_{2-4}-alkenyl; provided that:

(a) when R_3 is mono-C_{3-8}-cycloalkylamino, R_2 represents C_{1-4}-alkoxy-C_{1-4}-alkyl, aralkyl, phenoxy-C_{1-4}-alkyl or C_{2-4}-alkynyl;

(b) when R_3 is



R_2 represents C_{1-4}-alkoxy-C_{1-4}-alkyl or aralkyl;

(c) when R_3 is

R_2 represents C_{3-8}-cycloalkyl; and

(d) when R_3 is C_{1-4}-alkylthio, R_2 represents C_{1-4}-alkoxy-C_{1-4}-alkyl, aralkyl or phenoxy-C_{1-4}-alkyl.

4,454,132
PHARMACEUTICAL COMPOSITIONS OF NOVEL SUBSTITUTED PYRAZINYL-1,2,4-OXADIAZOLES USEFUL IN THE TREATMENT OF EDEMA AND HYPERTENSION

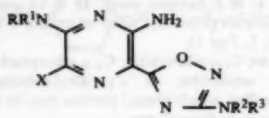
Mark G. Bock, Hatfield; Edward J. Cragoe, Jr., and Robert L. Smith, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 244,509, Mar. 16, 1981, Pat. No. 4,362,724, which is a continuation-in-part of Ser. No. 151,494, May 19, 1980, Pat. No. 4,309,540. This application Sep. 1, 1982, Ser. No. 413,954

Int. Cl.³ A61K *31/495;* **C07D** *413/04*

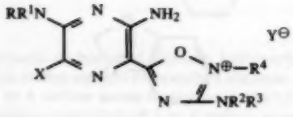
U.S. Cl. 424—250 **4 Claims**

1. A pharmaceutical composition useful in the treatment of edema and hypertension which comprises an effective amount of a compound of the formula



I

or



II

wherein

R is hydrogen or lower alkyl (C_{1-5}),

R^1 is hydrogen or lower alkyl (C_{1-5}),

R^2 is hydrogen or lower alkyl (C_{1-5}),

R^3 is hydrogen or lower alkyl (C_{1-5}),

R and R^1 can be joined to form an alkylene group of from 2–4 carbon atoms,

R^4 is lower alkyl (C_{1-5}),

X is halo, cyano or phenyl;

Y^- is chloride, bromide or iodide or a suitable anion and a pharmaceutically acceptable carrier.

4,454,133
ANTIMICROBIAL COMPOUNDS

Philip A. Berke, Madison, and William E. Rosen, Summit, both of N.J., assignors to Sutton Laboratories, Inc., Chatham, N.J.

Filed Oct. 6, 1981, Ser. No. 308,994

Int. Cl.³ A01N *43/40, 43/50, 35/00*

U.S. Cl. 424—267 **9 Claims**

1. A method for inhibiting microbial growth in a substance requiring microbial inhibition, comprising incorporating into said substance an effective microbial growth inhibiting amount of a reaction product of glutaraldehyde and a nitrogen-containing compound having the structural formula

where R and R^1 together with —NH—CO— to which they are attached form a cyclic amide or imide in the ratio of glutaraldehyde to nitrogen-containing compound between 1:2 and 4:1, with the proviso that said nitrogen-containing compound is not allantoin.

4,454,134
AMIDE CARBAMATES AND AMIDE OXIME COMPOUNDS

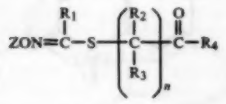
John A. Durden, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 14, 1976, Ser. No. 695,807

Int. Cl.³ A01N *43/00, 37/00, 37/34, 43/84*

U.S. Cl. 424—244 **69 Claims**

1. A compound of the formula:

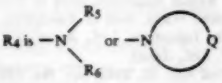


wherein:

n is 1 to 6;

R_1 is carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkyl or phenyl; or phenyl or alkyl substituted with one or more chloro, bromo, fluoro, nitro, cyano, alkoxy, alkyl, alkylthio, alkylsulfinyl, alkylsulfonyl, carbamoyl, alkylcarbamoyl or dialkylcarbamoyl substituents;

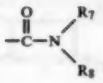
R_2 and R_3 are individually hydrogen or alkyl, provided that when n is greater than one each methylene may be substituted with the same or different R_2 and R_3 substituents in any combination;



R_5 and R_6 are individually hydrogen or alkyl; and

Q is a divalent alkylene chain completing a 4, 5, 6 or 7 membered alicylic ring which may include one of the group of divalent oxygen, sulfur, sulfinyl or sulfonyl;

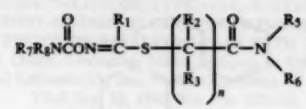
Z is hydrogen or



wherein;

R_7 and R_8 are individually hydrogen, alkyl, alkenyl or alkynyl; or when R_8 is alkyl R_7 may be alkanoyl, trihalomethanesulfenyl, alkylthiosulfenyl, or substituted or unsubstituted phenylsulfenyl or phenylthiosulfenyl wherein the permissible substituents are one or more chloro, bromo, fluoro, nitro, cyano, alkoxy or alkyl substituent in any combination; wherein R_1, R_2, R_3, R_5, R_6, R_7 and R_8 substituents individually may include from 1 to 6 aliphatic carbons.

48. A method of controlling insects and mites which comprises subjecting them to a miticidally or insecticidally effective amount of a compound of the formula;



wherein:

n is 1 to 6;

R_1 is alkyl, phenyl or substituted alkyl or phenyl wherein the pemissible substituents are one or more chloro, bromo, fluoro, nitro, alkoxy, alkyl, alkylthio, alkylsulfenyl or alkylsulfonyl;

R_2 and R_3 are individually hydrogen or alkyl, provided that when n is greater than one each methylene may be substituted with the same or different R_2 and R_3 groups;

R_5 and R_6 are individually hydrogen or alkyl;

R_7 and R_8 are individually hydrogen, alkyl, alkenyl or alkynyl; or when R_7 is alkyl, R_8 may be trihalomethanesulfenyl, alkylthiosulfenyl, or either substituted or unsubstituted phenylsulfenyl or phenylthiosulfenyl wherein the permissible substituents are one or more chloro, bromo, fluoro, nitro, alkoxy or alkyl;

with the proviso that R_1, R_2, R_3, R_4, R_5, R_6, and R_7 individually may not include more than six aliphatic carbon atoms.

4,454,135

ORGANOTIN INSECTICIDAL SULFONAMIDES

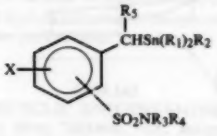
Gerald E. Lepone, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 4, 1983, Ser. No. 455,505

Int. Cl.³ A01N *55/04*; C07F *7/22*

U.S. Cl. 424—245 **20 Claims**

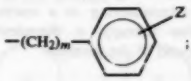
1. A compound having the formula:



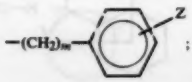
wherein

R_1 and R_2 are independently C_1–C_3 alkyl;

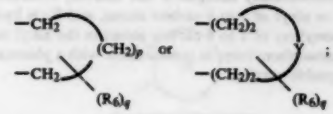
R_3 is H, OCH_3, C_1–C_{20} alkyl, C_5–C_6 cycloalkyl optionally substituted with CH_3 or OCH_3, C_1–C_3 alkyl substituted with OCH_3 or OC_2H_5, or



R_4 is H, C_1–C_{20} alkyl, C_5–C_6 cycloalkyl optionally substituted with CH_3 or OCH_3, C_1–C_3 alkyl substituted with OCH_3 or OC_2H_5, or



or R_3 and R_4 may be taken together to form



R_5 is H or CH_3;

R_6 is CH_3;

X is H, F, Cl, CH_3 or OCH_3;

Y is O or NR_7;

Z is H, F, Cl, CH_3 or OCH_3;

R_7 is C_1–C_3 alkyl;

m is 0 or 1;

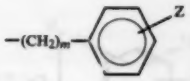
p is 2, 3 or 4; and

q is 0, 1 or 2;

or an agriculturally suitable salt thereof; provided that:

(1) the total number of carbons in R_3 and R_4 is less than or equal to 20;

(2) when either R_3 or R_4 is



and the other is alkyl, the total number of carbons in R_3 and R_4 is less than or equal to 12; and

(3) when R_3=OCH_3, then R_4=H or C_1–C_4 alkyl.

4,454,136

SUBSTITUTED BENZOPYRANOTRIAZOLES AND ANTIALLERGIC USE

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst, Nr Horsham, both of England, assignors to Beecham Group Limited, England

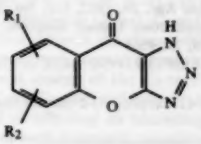
Continuation of Ser. No. 224,966, Jan. 14, 1981, abandoned. This application Sep. 15, 1981, Ser. No. 302,460

Claims priority, application United Kingdom, Jan. 19, 1980, 8001855

Int. Cl.³ A61K *31/41*; C07D *491/052*

U.S. Cl. 424—245 **45 Claims**

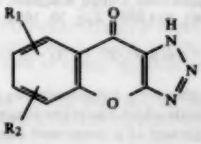
1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R_1 is hydrogen or alkyl of 1 to 6 carbon atoms, and R_2 is hydroxy, alkylsulphonyloxy of 1 to 4 carbon atoms in the alkyl moiety, or p-toluenesulphonyloxy.

14. A pharmaceutical composition useful for the prophylaxis or treatment of diseases due to allergic response in mammals which comprises a therapeutically effective amount of a compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein R_1 is hydrogen or alkyl of 1 to 6 carbon atoms, and R_2 is hydroxy, alkylsulphonyloxy of 1 to 4 carbon atoms in the alkyl moiety, or p-toluenesulphonyloxy, in combination with a pharmaceutically acceptable carrier.

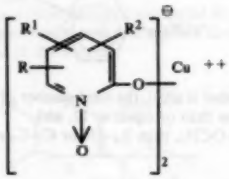
4,454,137

FEED COMPOSITIONS CONTAINING COPPER SALTS OF 2-HYDROXYPYRIDINE-N-OXIDES

Govind K. Menon, Downington, Pa., and Winfred J. Sanders, Mt. Holly, N.J., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 29, 1982, Ser. No. 403,228
Int. Cl.³ A61K *31/555*
U.S. Cl. 424—245 **11 Claims**

1. The method of improving the weight gain and feed efficiency of meat-producing monogastric animals comprising feeding to said animals an effective but nontoxic quantity of a compound of the formula:



in which R, R^1 or R^2 are, each, hydrogen, lower alkyl of 1–6 carbons, lower alkoxy of 1–6 carbons, halo, nitro, cyclohexyl, phenyl, cyclohexylmethyl, benzyl or allyl.

4,454,138

XANTHINE DERIVATIVES AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Joachim E. Goring, Gronau, Fed. Rep. of Germany, assignor to Johann A. Wuelfing, Fed. Rep. of Germany

Continuation of Ser. No. 135,285, Mar. 31, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 363,125
Claims priority, application United Kingdom, Apr. 5, 1979, 7912052; Jun. 5, 1979, 7919505
Int. Cl.³ C07D *239/56*; A61K *31/52*
U.S. Cl. 424—253 **10 Claims**

1. 1,3-Di-n-butyl-7-(2-oxopropyl)-2-thioxanthine.

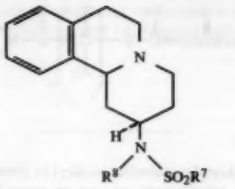
4,454,139

α_2-ADRENOCEPTOR ANTAGONISTIC BENZOQUINOLIZINES

Terence J. Ward, Slough, and John L. Archibald, Farnham Royal, both of England, assignors to John Wyeth & Brother, Limited, Maidenhead, England

Continuation-in-part of Ser. No. 291,119, Aug. 10, 1981, abandoned. This application Sep. 9, 1982, Ser. No. 416,399
Claims priority, application United Kingdom, Aug. 28, 1980, 8027889; Apr. 16, 1981, 8112080; Aug. 20, 1981, 8125468; Oct. 7, 1981, 8130350
Int. Cl.³ A61K *31/47*; C07D *455/06*
U.S. Cl. 424—258 **15 Claims**

15. A method of selectively antagonising α_2 adrenoceptors in warm blooded animals which comprises administering to the animal an effective amount of a compound selected from the group consisting of a benzoquinolizine of the formula



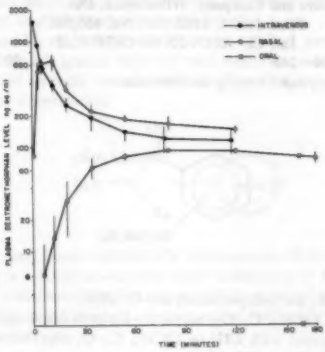
and a pharmaceutically acceptable acid addition salt thereof, wherein R^7 is lower alkyl or a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy or halogen substituents and R^8 is methyl or ethyl.

4,454,140

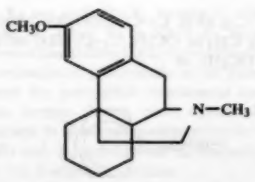
NASAL ADMINISTRATION OF DEXTROMETHORPHAN

Arthur H. Goldberg, Montclair, N.J.; Meyer Matluck, Flushing, N.Y., and Joseph A. Ranucci, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 7, 1982, Ser. No. 415,209
Int. Cl.³ A61K *31/485*
U.S. Cl. 424—260 **6 Claims**



1. A method for reducing the incidence of coughs which comprises nasally administering to a warm-blooded animal requiring antitussive therapy, a therapeutically effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

4,454,141

TRANS-B/C-7-(1-HYDROXYPENTYL)-3-METHOXY-17 METHYL-6,7-DIDEHYDROMORPHINANS, AND METHODS OF RELIEVING PAIN WITH THEM

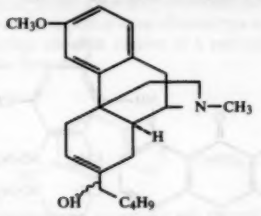
James E. Quick, Lexington, Mass., assignor to SISA Pharmaceutical Laboratories, Inc., Cambridge, Mass.

Filed Sep. 23, 1982, Ser. No. 422,218

Int. Cl.³ A61K *31/485;* **C07D** *221/28*

U.S. Cl. 424—260 **6 Claims**

1. Trans-B/C-7-(1-hydroxypentyl)-3-methoxy-17-methyl-6,7-didehydromorphinans of the formula:



4. A method of relieving pain in an individual requiring such treatment which comprises administering to such individual an analgesically effective amount of a compound characterized by the formula in claim 1.

4,454,142

HYPERKINETIC CHILD TREATMENT AGENT

Ronald R. Tuttle, Miami, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed May 26, 1983, Ser. No. 479,639

Int. Cl.³ A61K *31/485*

U.S. Cl. 424—260 **4 Claims**

1. A method of orally treating a child having a tendency to be overactive to the extent of requiring an external control which comprises orally administering to said child a pharmaceutically effective amount of 6-methylene-6-desoxy-N-cyclopropylmethyl-14-hydroxydihydronormorphone to said patient, whereby the patient tends to reduce his food intake.

4,454,143

TRICYCLIC ANTIHISTAMINES

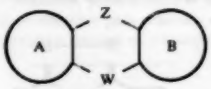
Frank J. Villani, West Caldwell, N.J., assignor to Schering Corporation, Madison, N.J.

Division of Ser. No. 243,681, Mar. 16, 1981, Pat. No. 4,355,036, which is a continuation-in-part of Ser. No. 160,795, Jun. 19, 1980, Pat. No. 4,282,233. This application Jul. 29, 1982, Ser. No. 403,274

Int. Cl.³ A61K *31/44;* **C07D** *495/04*

U.S. Cl. 424—263 **4 Claims**

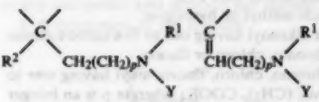
1. A compound of the formula

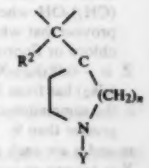


wherein

is selected from the group consisting of 2- or 3-thiophene;

is 2-, 3- or 4-pyridyl; Z is an alkylene chain having 0 to 2 carbon atoms in the chain, said 2 carbon chain optionally having one double bond, said chain optionally having either a carbonyl oxygen or a hydroxy group as a substituent; W is





wherein n is 1 or 2 and p is 1 or 2, R^1 is C_1 to C_6 alkyl, R^2 is hydrogen or C_1 to C_3 alkyl, and the dotted line represents an optional double bond, R^2 being absent if the double bond is present, and Y is —COOR or $—SO_2R$, with the proviso that when Y is —COOR, R is C_1 to C_{12} alkyl, substituted C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, substituted C_2 to C_{12} alkenyl, phenyl, substituted phenyl, C_7 to C_{10} phenylalkyl or C_7 to C_{10} phenylalkyl wherein the phenyl moiety is substituted, or R is -2, -3, or -4 piperidyl or N-substituted piperidyl, wherein the substituents on said substituted C_1 to C_{12} alkyl and on said substituted C_2 to C_{12} alkenyl are selected from amino or substituted amino and the substituents on said substituted amino are selected from C_1 to C_6 alkyl, the substituents on said substituted phenyl and on said substituted phenyl moiety of the C_7 to C_{10} phenylalkyl are selected from C_1 to C_4 alkyl and halo, and the substituent on said N-substituted piperidyl is C_1 to C_4 alkyl, and with the proviso that when Y is $—SO_2R$, R is C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, phenyl, substituted phenyl, C_7 to C_{10} phenylalkyl, C_7 to C_{10} phenylalkyl wherein the phenyl moiety is substituted, wherein the substituents on said substituted phenyl and said substituted phenyl moiety of the C_7 to C_{10} phenylalkyl are selected from C_1 to C_4 alkyl and halo.

4. A method of effecting an anti-allergic response to an animal in need of such treatment comprising administering to the animal an effective amount of a compound as claimed in claim 1.

4,454,144

SUBSTITUTED DIBENZO[b,d]PYRAN ANALGESICS

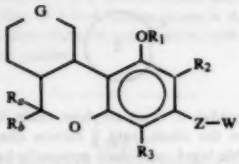
Lawrence S. Melvin, Jr., Ledyard, and Michael R. Johnson, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,418

Int. Cl.³ A61K *31/35, 31/44;* **C07D** *311/78, 405/02*

U.S. Cl. 424—263 **11 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein:

G is hydroxymethylene or carbonyl;

R_a and R_b are each methyl or hydrogen;

R_1 is hydrogen or alkanoyl having one to five carbon atoms;

R_2 is hydrogen, bromo, chloro or fluoro;

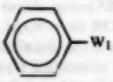
R_3 is hydrogen, bromo, chloro, fluoro, alkyl having one to six carbon atoms, $(CH_2)_pCOOR_4$ wherein p is an integer from 0–6 and R_4 is hydrogen, methyl or ethyl, or $(CH_2)_qOH$ wherein q is an integer from 1–6; with the proviso that when R_3 is hydrogen or alkyl, R_2 is bromo, chloro or fluoro;

Z is $-(alk_1)_m-X-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) has from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

m and n are each zero or 1;

X is oxygen or methylene; and

W is methyl, pyridyl, piperidyl or



wherein W_1 is hydrogen, fluoro, chloro or methoxy.

11. A method for producing analgesia in a mammal which comprises administering thereto an analgesic producing quantity of a compound of claim **1**.

4,454,145

NICOTINATES OF ALKANEDIOLS HAVING HYPOLIPIDAEMIC ACTIVITY AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Manlio Cristofori; Valerio Borzatta, both of Bologna, and Mauro Morotti, Marzabotto, all of Italy, assignors to Alfa Farmaceutici S.p.A., Bologna, Italy

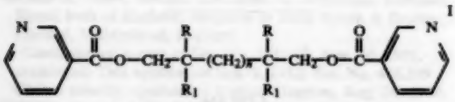
Filed Apr. 19, 1982, Ser. No. 369,579

Claims priority, application Italy, May 6, 1981, 3423 A/81

Int. Cl.³ A61K *31/455;* **C07D** *213/80*

U.S. Cl. 424—266 **9 Claims**

1. A derivative of an alkanediol having hypolipidemic activity of formula



I

wherein the pairs of substituents R and R_1 independently represent methyl or ethyl and n is an integer from 6 to 8; and salts thereof with a pharmaceutically acceptable acid.

9. A method of treating hyperlipidaemia, which comprises administering to warm blooded animals, including humans, a daily dosage varying from about 3 to about 10 mg/Kg of body weight of a compound as defined in claim **1**.

4,454,146

SYNERGISTIC PRESERVATIVE COMPOSITIONS

Gayle E. Borovian, Dover, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed May 14, 1982, Ser. No. 378,372

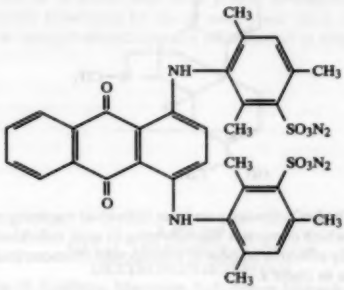
Int. Cl.³ A01N *41/02, 43/80*

U.S. Cl. 424—270 **24 Claims**

1. A preservative comprising:

(a) a first component selected from the group consisting of a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one in a ratio of about 5:1 to 1:5, benzisothiazalone, and mixtures thereof; and

(b) a second component having the formula:



II

wherein the weight ratio of said second component to said first component is 1000:1 to 1:10, the combination acting to kill or inhibit the growth of bacteria.

4,454,147

NEMATICIDAL 2-CHLORO-5-ARYL-1,3,4-THIADIAZOLES

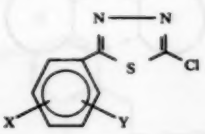
William S. DiMenna, East Amherst, and Carmine P. DiSanzo, Medina, both of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 27, 1982, Ser. No. 382,537

Int. Cl.³ A01N *43/78*

U.S. Cl. 424—270 **14 Claims**

1. A nematicidal composition comprising in admixture with an agriculturally acceptable carrier a nematicidally effective amount of at least one nematicidal compound of the formula



wherein X and Y are substituents independently selected from the group consisting of lower alkoxy, phenyl, isothiocyano, trifluoromethylthio, and nitro; or Y is hydrogen and X is selected from the group consisting of lower alkoxy, phenyl, isothiocyano, trifluoromethylthio, 2-nitro, and 4-nitro.

4,454,148
5-HYDROXY-2-BENZOTHIAZOLESULFONAMIDE FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

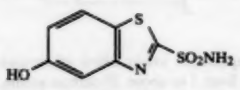
Otto Woltersdorf, Jr., Chalfont; Harvey Schwam, Lafayette Hills; Stuart R. Michelson, Lansdale, and John M. Sondey, Hatfield, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 413,211, Sep. 2, 1982, abandoned. This application Dec. 9, 1982, Ser. No. 448,149

Int. Cl.³ A61K *31/425*; **C07D** *231/00*

U.S. Cl. 424—270 **8 Claims**

1. A method for treating elevated intraocular pressure which comprises topically applying to an affected eye an intraocular pressure lowering effective amount of a carbonic anhydrase inhibitor of the formula:



or an ophthalmologically acceptable salt thereof.

4,454,149
IMIDAZO[1,2-a]IMIDAZOLES IN THE TREATMENT OF PAIN, HYPERTONIA AND CORONARY DISEASES

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim; Klaus Stockhaus, Bingen; Wolfgang Hoefke, Wiesbaden, and Wolfram Gaida, Ingelheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

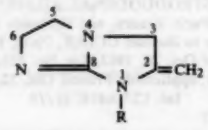
Filed Jun. 17, 1982, Ser. No. 389,283

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124701

Int. Cl.³ A61K *31/415*; **C07D** *487/04*

U.S. Cl. 424—273 R **13 Claims**

1. A compound of the formula



wherein R represents a phenyl group having from 1 to 3 substituents selected from the group consisting of hydrogen, fluorine, chlorine and bromine atoms and methyl and trifluoromethyl groups, the substituents being identical or different, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

13. A method of relieving pain or treating hypertonia or coronary diseases in a host in need of such relief or treatment which comprises perorally, parenterally, or rectally administering to said host an effective pain relieving or hypertonia or coronary disease treating amount of a compound of claim 1.

4,454,150
6,7,8,9-TETRAHYDRO-3H-BENZ(E)INDOL-7-AMINES AND A METHOD OF DOPAMINE RECEPTOR STIMULATION THEREWITH

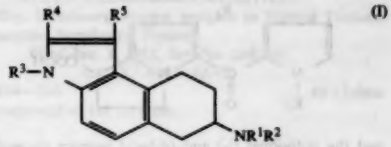
André A. Asselin, St. Laurent, and Leslie G. Humber, Dollard des Ormeaux, both of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Oct. 19, 1981, Ser. No. 312,464

Int. Cl.³ A61K *31/40*; **C07D** *209/60*

U.S. Cl. 424—274 **6 Claims**

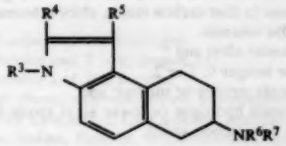
1. A compound of the formula



(I)

wherein R^1 and R^2 each is hydrogen or lower alkyl having 1 to 5 carbon atoms and R^3, R^4 and R^5 are hydrogen, or a therapeutically acceptable acid addition salt thereof.

4. A compound of the formula



in which R^3, R^4 and R^5 each is hydrogen, R^6 is benzyl and R^7 is benzyl or lower alkyl.

6. A method of stimulating dopamine-receptors in a mammal in need thereof, which comprises administering to said mammal an effective dopamine receptor stimulating amount of a compound of claim 1 or a therapeutically acceptable acid addition salt thereof.

4,454,151
USE OF PYRROLO PYRROLES IN TREATMENT OF OPHTHALMIC DISEASES

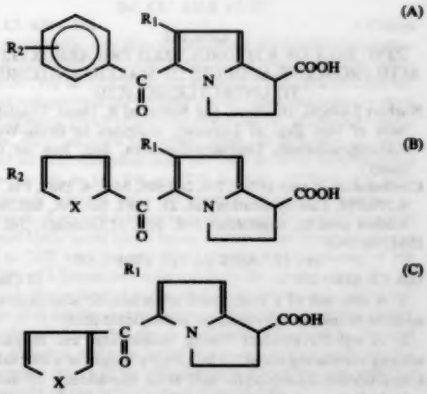
L. David Waterbury, San Mateo, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 22, 1982, Ser. No. 360,754

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **18 Claims**

1. A method for treating inflammation of the eye in mammals which method comprises topical application to the eye of a mammal in need thereof a therapeutically effective amount of a pharmaceutical ophthalmic composition containing 0.005-1% wt/vol of a compound chosen from those represented by the formulas:

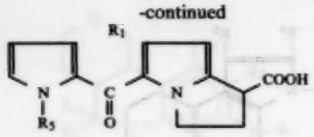


(A)

(B)

(C)

-continued



(D)

and the individual (l-) and (d-)acid isomers thereof and the pharmaceutically acceptable non-toxic esters and salts thereof, wherein

R_1 represents hydrogen; lower alkyl group having from one to four carbon atoms; chloro or bromo;

R_2 represents hydrogen, a lower alkyl group having from one to four carbon atoms, a lower alkoxy group having from one to four carbon atoms, chloro, bromo, fluoro; or $R_4S(O)n$ wherein

R_4 is lower alkyl and

n is the integer 0, 1 or 2;

X represents oxygen or sulphur; and

R_5 represents hydrogen or lower alkyl group having from one to four carbon atoms.

4,454,152

METHOXSALEN DOSAGE FORMS

Richard H. Barry, Bloomfield, and Jack H. Lazarus, Jersey City, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 147,697, May 7, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,982

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **3 Claims**

1. A method of treating a subject afflicted with psoriasis or vitiligo which method comprises

(a) administering to the subject an oral dosage composition comprising a solution of an amount of methoxsalen effective for the treatment of psoriasis or vitiligo in about 10 to about 97.5 percent by weight based on the total weight of the composition of a polyethylene glycol or a mixture of polyethylene glycols which polyethylene glycol or mixture is fluid at room temperature contained within a capsule.

(b) waiting a sufficient time to obtain a peak blood level of methoxsalen in the subject, and

(c) irradiating the subject with ultraviolet light.

4,454,153

ZINC SALT OF A HYDROLYZED TRICARBOXYLIC ACID FROM ENE-ADDUCTS OF MALEIC ANHYDRIDE TO UNDECYLENIC ACID

Norbert Lowicki, Duisburg, and Natvarlal B. Desai, Dinslaken, both of Fed. Rep. of Germany, assignors to Grillo-Werke Aktiengesellschaft, Duisburg-Hamborn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 240,606, Mar. 4, 1981, Pat. No. 4,376,789. This application Jul. 21, 1982, Ser. No. 400,394

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129826

Int. Cl.³ A61K *31/315*; C09F *5/00*

U.S. Cl. 424—289 **13 Claims**

1. A zinc salt of a hydrolyzed tricarboxylic acid from ene-adducts of maleic anhydride to undecylenic acid.

3. A toiletry product having bactericidal and fungicidal activity containing about 0.3 to 2.5% by weight of a zinc salt of a hydrolyzed tricarboxylic acid from ene-adducts of maleic anhydride to undecylenic acid and a toiletry product carrier.

4,454,154

METHOD FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF SELECTIVELY METABOLIZED BETA-BLOCKING AGENTS

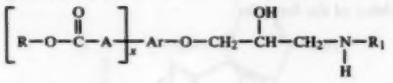
William L. Matier, Libertyville, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 23, 1981, Ser. No. 276,658

Int. Cl.³ A61K *31/24*

U.S. Cl. 424—309 **16 Claims**

1. A method for treating glaucoma or for lowering intraocular pressure in a mammal, which comprises topically applying to the eye of such mammal an intraocular pressure-lowering effective amount of a compound represented by the formula:



wherein R represents lower alkyl of straight or branched carbon chains from 1 to about 10 carbon atoms, lower cycloalkyl of from 3 to about 5 carbon atoms, lower alkenyl of from 2 to about 5 carbon atoms, lower alkynyl of from 2 to about 5 carbon atoms; A is a direct bond, lower alkylene or lower alkenylene; x is an integer from 1 to 3; Ar is phenyl or napthyl optionally additionally substituted with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halogen; R_1 is lower alkyl, lower hydroxyalkyl, lower alkenyl, lower alkynyl, or aralkyl; or a pharmaceutically acceptable salt thereof.

4,454,155

PHARMACEUTICAL COMPOSITIONS CONTAINING A MONO-SUBSTITUTED DERIVATIVE OF 4-PHENYL-4-OXOBUTEN-2-OIC ACID, AND METHODS OF USING THEM IN TREATING GASTRIC AND GASTRODUODENAL AILMENTS

Yani Christidis, Paris, France, and Fernando Barzaghi, Milan, Italy, assignors to Roussel UCLAF, Paris, France

Filed Oct. 20, 1982, Ser. No. 435,623

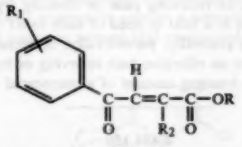
Claims priority, application France, Oct. 22, 1981, 81 19832

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **15 Claims**

1. A method for treating a patient suffering from hyperchlorhydria, gastric or gastroduodenal ulcers, gastritis hiatal hernias, or gastric ailments accompanied by gastric hyperacidity comprising:

administering to said patient a therapeutically effective amount of a compound of formula (I):



(I)

in which R represents a hydrogen atom or an alkyl radical containing from 1 to 8 carbon atoms, R_1 represents a hydroxy radical in the 2-position or an alkoxy radical in the 4-position containing from 1 to 8 carbon atoms, and R_2 represents a hydrogen atom or an alkyl radical containing from 1 to 8 carbon atoms or of a pharmaceutically acceptable alkali metal, alkaline earth metal ammonium or amine salt of a compound of formula (I) wherein R represents a hydrogen atom.

4,454,156

4-AMINO-HEPTA-5,6-DIENOIC ACID

Patrick Casara, Truchtersheim, France, assignor to Merrell-Toraude et Compagnie, Strasbourg, France

Filed May 9, 1983, Ser. No. 492,986
Claims priority, application United Kingdom, May 17, 1982, 8214290
Int. Cl.³ C07C 101/28; A61K 31/195
U.S. Cl. 424—319 6 Claims

1. (S)-4-Amino-hepta-5,6-dienoic acid or a pharmaceutically acceptable salt thereof.

5. A method of inhibiting GABA-T in a patient in need thereof which comprises administering to the patient a GABA-T inhibiting amount of a compound as claimed in claim 1.

4,454,157

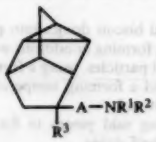
ANTIVIRAL TETRACYCLONONANE DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Douglas L. Swallow, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 967,794, Dec. 4, 1978, Pat. No. 4,357,352. This application Aug. 17, 1982, Ser. No. 408,919
Claims priority, application United Kingdom, Dec. 22, 1977, 53446/77
The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.
Int. Cl.³ C07C 87/40; A01N 33/02, 33/04
U.S. Cl. 424—325 5 Claims

1. A tetracyclononane derivative of the formula:

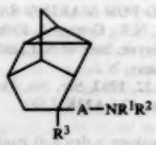
II



wherein R^1 and R^2 are hydrogen, R^3 is hydrogen or methyl and A is a radical of the formula CH_2CH_2 or $CH{-}R^4$ in which R^4 is hydrogen, methyl or phenyl, provided that when A is a radical of the formula $CH{-}R^4$, at least one of R^3 and R^4 is other than hydrogen, or a pharmaceutically-acceptable acid-addition salt thereof.

5. A method of combatting or preventing an influenza virus infection in a warm blooded animal which comprises administering an effective amount of a tetracyclononane derivative of the formula:

II



wherein R^1 and R^2 are hydrogen, R^3 is hydrogen or methyl and A is a radical of the formula CH_2CH_2 or $CH{-}R^4$ in which R^4 is hydrogen, methyl or phenyl or a pharmaceutically-acceptable acid-addition salt thereof.

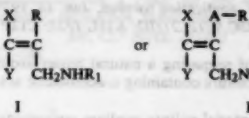
4,454,158

ALLYL AMINE MAO INHIBITORS

Philippe Bey, Strasbourg, France, assignor to Merrell Toraude et Compagnie, Strasbourg, France

Filed Jun. 1, 1981, Ser. No. 268,555
Int. Cl.³ A01N 33/02
U.S. Cl. 424—330 68 Claims

1. A compound of the formula:



I II

wherein:

(a) X is fluorine and Y is hydrogen,

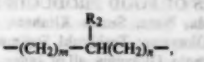
(b) Y is fluorine and X is hydrogen, or

(c) X is fluorine and Y is fluorine;

R is phenyl; phenyl monosubstituted, disubstituted, or trisubstituted by C_1–C_8alkyl, C_1–C_8alkoxy, hydroxy, chlorine, bromine, iodine, fluorine, trifluoromethyl, nitro, C_1–C_6alkylcarbonyl, benzoyl, or phenyl; 1- or 2-naphthyl; 1-, 2-, or 3-indenyl; 1-, 2-, or 9-fluorenyl; 1-, 2-, or 3-piperidinyl; 2- or 3-pyrrolyl; 2- or 3-thienyl; 2- or 3-furanyl; 2- or 3-indolyl; 2- or 3-thianaphthenyl; or 2- or 3-benzofuranyl;

R_1 is hydrogen, C_1–C_8alkyl, benzyl, or phenethyl; and

A is a divalent radical of the formula:



wherein R_2 is hydrogen, methyl, or ethyl, and m and n, independently, are an integer from 0 to 4, provided that m+n cannot be greater than 4; $-(CH_2)_p-D-(CH_2)_q-$, wherein D is oxygen or sulfur, p is an integer from 2 to 4, and q is an integer from 0 to 2, provided that p+q cannot be greater than 4; or $-(CH_2)_rCH{=}CH(CH_2)_s-$, wherein r is an integer from 1 to 3 and s is an integer from 0 to 2, provided that r+s cannot be greater than 3; or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,454,159

DERMATOLOGICAL TREATMENT PREPARATIONS

Albert Musher, 17 W. 71st. St., New York, N.Y. 10023

Division of Ser. No. 334,480, Dec. 28, 1981. This application Aug. 24, 1982, Ser. No. 410,989
Int. Cl.³ A61K 47/00
U.S. Cl. 424—358 5 Claims

1. A soothing, dry skin, conditioning dermatological preparation consisting of a lipid/lipoid blend which consists essentially of 11% to 30% glycerol trioleate; 15 to 45% of a glyceride oil composition comprising one or more oils selected from the following group consisting of peanut oil, sesame oil, cocoa butter, olive oil, corn oil, wheat germ oil, safflower oil, palm kernel oil and sunflower seed oil; 35% to 55% hydrogenated glyceride oil or fat; 2% to 12% lecithin; 0.5% to 8% of a tocopherol selected form the group consisting of d-alpha tocopherol, dl-tocopherol acetate, dl-tocopherol and Vitamin E oil; said lipid/lipoid blend being combined within the range of 40% to 78% with the additional constituents consisting of 2% to 12% of a humectant selected from the group consisting of sorbitol, glycerine and sugar; 18% to 45% isopropyl palmitate; 3% to 14% squalene or squalane; and a collagen product product selected from the group consisting of a protein derived from collagen, collagen hydrolysate and soluble collagen the percentage ranges of the additional constituents being based on the weight of the total claimed constituents.

4,454,160

AROMA DISTILLATE AND METHOD FOR PREPARING SAME

Hans Jönsson, Lund; Hans-Erik Pettersson, Löddekoping, and Kennerth Andersson, Södra Sandby, all of Sweden, assignors to Svenska Mejeriernas Riksforenings Ekonomi AB, Stockholm, Sweden

Continuation of Ser. No. 158,560, Jun. 11, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,128

Claims priority, application Sweden, Jun. 15, 1979, 7905271

Int. Cl.³ A23C *9/12, 21/02;* A23L *1/23;* C12P *7/26*

U.S. Cl. 426—34 6 Claims

1. A method of preparing a natural butter aroma distillate from a bacterial culture containing α-acetolactic acid, comprising

providing a bacterial culture medium comprising skim milk or whey as substrate, the bacteria being composed of a mixture of *Streptococcus diacetylactis, Streptococcus lactis* and *Streptococcus cremoris* and the medium having a substantial accumulation of α-acetolactic acid;

acidifying the bacterial culture medium to a pH of from 3 to 4; and

effecting water vapour distillation of said acidified bacterial culture medium, in the presence of oxygen, to convert the α-acetolactic acid to diacetyl and to distill off approximately 5–15% of the bacterial culture medium.

4,454,161

PROCESS FOR THE PRODUCTION OF BRANCHING ENZYME, AND A METHOD FOR IMPROVING THE QUALITIES OF FOOD PRODUCTS THEREWITH

Shigetaka Okada, Nara; Sumio Kitahata, Osaka; Shigeharu Yoshikawa, Okayama; Toshiyuki Sugimoto, Okayama, and Kaname Sugimoto, Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Jan. 4, 1982, Ser. No. 336,941

Claims priority, application Japan, Feb. 7, 1981, 56-17340; Feb. 7, 1981, 56-17341

Int. Cl.³ A23L *1/195;* C12Q *1/48;* A21D *10/00*

U.S. Cl. 426—48 17 Claims

1. A process for producing a food product containing an amylaceous substance, comprising:

preparing an aqueous solution of an amylaceous substance selected from the group consisting of amylose, amylopectin, starch, dextrin and mixtures thereof;

subjecting the aqueous solution to the action of a branching enzyme (EC 2.4.1.18) for a period sufficient to form substantial branches in the amylaceous substance; and

preparing a food product containing the resultant branched amylaceous substance.

4,454,162

CONCENTRATE CONTAINING TRACE ELEMENTS SUITABLE FOR HUMAN BEINGS AND ANIMALS, A PROCESS FOR ITS PRODUCTION AND ITS USE

Rudolf Schaaze, Friedenstr. 43, c/o G. Herrmann-Seidel, D-8034 Unterpfaffenhofen, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,018

Claims priority, application European Pat. Off., Nov. 14, 1980, 80107054.1

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—74 6 Claims

1. A process for the production of a concentrate containing trace elements suitable for human beings and animals consisting essentially of the steps of adding, with intensive agitation, at a temperature in the range of from 10° C. to 50° C., vegetable ash containing inorganic constituents in a quantity between 8 and 55 parts, based on 100 parts by weight of the resulting dry concentrate, to 20 to 75 parts, based on the 100 parts by weight of the resulting dry concentrate, of an acid liquid milk by-product containing more than 9% ash in the dry state, said addition and agitation being sufficient to uniformly distribute said vegetable ash and increase the pH of the product to a value above 6, adding at least one carbohydrate or gum with agitation and drying the resulting enriched liquid or paste-form concentrate.

4,454,163

CANINE BISCUIT CONTAINING DISCRETE MEAT AND/OR MEAT BY-PRODUCT PARTICLES AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erfurt, Lawrenceville, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jan. 22, 1982, Ser. No. 341,969

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—549 18 Claims

1. In a method for making a dry hard canine biscuit from a final biscuit dough containing a non-fat solids portion which contains farinaceous material, an added fat portion and an added water portion, the improvement consisting essentially of the steps of:

(a) admixing dehydrated meat and/or meat by-product particles or meat and/or meat by-product particles having a moisture content of less than or equal to about 35 percent by weight of the particles with said non-fat solids portion of a final biscuit mixture to form a substantially homogeneous dry blended mixture, no fat being added in step (a) except the indigenous fat which is present in said meat and/or meat by-product particles, and said meat and/or meat by-product particles being present in an amount of about 3 to about 15 weight percent, based on the total weight of said dry hard canine biscuit;

(b) admixing dry blended mixture (a) with said added-water portion of said final biscuit dough to form a first stage dough, said added-water portion being present in an amount of about 20 to 30 weight percent, based on the total weight of said final biscuit dough;

(c) mixing said added-fat portion of the biscuit dough with said first stage dough to form said final biscuit dough, said added-fat portion being present in an amount of about 1 to 5 weight percent, based on the total weight of said final biscuit dough;

(d) forming said final biscuit dough into pieces under low-shear non-cooking forming conditions which maintain the discreteness of said particles, using a forming pressure less than 75 p.s.i.g., and a forming temperature of up to 110 degrees Fahrenheit and

(e) baking and drying said pieces to form said dry hard biscuit, which is shelf stable,

wherein the water activity of said meat particles in step (a) is about 0.7 or lower and is less than the water activity of the final dough, obtained by admixing said non-fat solids portion, said fat portion and said water without said particles, which is at least 0.90 and whereby a dry hard biscuit is produced having discrete visually apparent meat particles distributed substantially uniformly throughout.

4,454,164

SOFT CANINE BISCUIT CONTAINING DISCRETE MEAT AND/OR MEAT BY-PRODUCT PARTICLES AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erfurt, Lawrenceville, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jan. 22, 1982, Ser. No. 341,970

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—549 18 Claims

1. In a method for making a dry soft canine biscuit from a final soft biscuit dough containing a non-fat solids portion which contains farinaceous material and added sugar, an added fat portion and an added water portion, the improvement consisting essentially of the steps of:

(a) admixing dehydrated meat and/or meat by-product particles or meat and/or meat by-product particles having a

moisture content of less than or equal to about 35 percent by weight of the particles with said non-fat solids portion of said final soft biscuit mixture to form a substantially homogeneous dry blended mixture, no fat being added in step (a) except the indigenous fat which is present in said meat and/or meat by-product particles, said non-fat solids portion containing about 10 to 15 weight percent of said added sugar, based in the total weight of said final soft biscuit dough, and said meat and/or meat by-product particles being present in an amount of about 3 to about 25 weight percent, based on the total weight of said dry soft canine biscuit;

(b) admixing said dry blended mixture of (a) with said added-water portion of said final soft biscuit dough to form a first stage dough, said added-water portion being present in an amount of about 15 to 25 weight percent, based on the total weight of said final soft biscuit dough;

(c) mixing said added-fat portion of the biscuit dough with said first stage dough to form said final soft biscuit dough, said added-fat portion being present in an amount of about 1 to 10 weight percent, based on the total weight of said final biscuit dough;

(d) forming said final soft biscuit dough into pieces under low shear non-cooking forming conditions which maintain the discreteness of said particles, using a forming pressure less than 75 p.s.i.g., and a forming temperature of up to 110 degrees Fahrenheit; and

(e) baking and drying said pieces to form said dry soft biscuit, which is shelf stable,

wherein the water activity of said meat particles in step (a) is 0.7 or lower and is less than the water activity of the final dough, obtained by admixing said non-fat solids portion, said fat portion and said water without said meat particles, which is at least 0.90 and whereby a dry soft biscuit is produced having discrete visually apparent meat particles distributed substantially uniformly throughout.

4,454,165

PREPARATION OF ALCOHOL-CONTAINING POWDERS

Jinichi Sato; Toshiro Kurusu; Masao Ota, all of Aichi, and Terumasa Mizutani, Gifu, all of Japan, assignors to Sato Shokuhin Kogyo Kabushiki Kaisha, Komaki, Japan

Filed Mar. 22, 1982, Ser. No. 360,320

Claims priority, application Japan, Nov. 27, 1981, 56-189167

Int. Cl.³ C12G *3/04, 3/06;* C12P *19/14*

U.S. Cl. 426—592 **3 Claims**

1. A process for preparing alcohol-containing powders with a high alcohol content in a high yield, which comprises

mixing a hydrolyzed starch which comprises at least 50% of saccharides having a glucose polymerization degree of 1 to 8 and comprises up to 10% of saccharides having a glucose polymerization degree of 1 to 2, said hydrolyzed starch being soluble in 40 W/W % aqueous solution of an alcohol, with an alcohol-containing aqueous solution having an alcohol concentration of at least 40 W/W %, said starch being present in an amount of 100 to 200% based on the water contained in the alcohol-containing aqueous solution, and spray-drying the resulting liquid mixture.

4,454,166

PROCESS FOR PREPARING SEMICONDUCTOR DEVICE

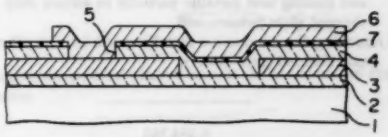
Haruhiko Abe, Itami; Hiroshi Harada, Kawanishi; Shigeji Kinoshita, Itami; Yoshihiro Hirata, Amagasaki; Masahiko Denda, and Yoichi Akasaka, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 176,103, Aug. 7, 1980, abandoned. This application Jan. 3, 1983, Ser. No. 455,251

Claims priority, application Japan, Sep. 17, 1979, 54-119522

Int. Cl.³ H01L *21/283*

U.S. Cl. 427—85 **6 Claims**



1. A process for preparing a semiconductor device, comprising:

forming a first aluminum-containing wiring layer on a main surface of a semiconductor substrate;

forming a nitride film on said electric conductive layer by a chemical vapor deposition;

forming an oxygen-containing layer on the entire surface of said nitride film to prevent reaction of said nitride film with a second aluminum-containing wiring film to be subsequently applied to the oxygen-containing layer; and

forming a second aluminum-containing film on and in contact with said oxygen-containing layer, said oxygen-containing layer preventing short-circuiting of the first and second aluminum-containing wiring layers through the nitride film.

4,454,167

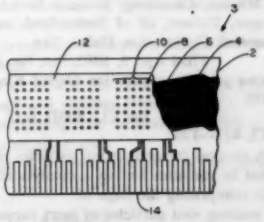
PROCESS FOR GENERATING CONDUCTIVE PATTERNS

Anthony J. Bernot, Placentia, and Kenneth Brown, Chino, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 6, 1982, Ser. No. 395,202

Int. Cl.³ H01B *1/08;* B32B *15/00*

U.S. Cl. 427—96 **6 Claims**



1. A process for generating a high resolution conductive pattern on an insulating substrate comprising the steps of:

providing a photosensitive resin;

applying said resin to at least one surface of said substrate for providing a coating thereon;

providing a mask containing the image of a desired conductive pattern and a suitable light source for exposing said coating;

exposing said coating to said light source through said mask producing an unexposed pattern in said coating;

providing a low temperature melting solder glass powder;

rubbing said glass powder over said coating, said powder adhering only to the unexposed pattern in said coating;

firing said substrate at a temperature below the softening temperature of said substrate but sufficiently high to sinter said glass powder to produce a sintered glass pattern on said substrate and burn off said coating;

providing a slurry comprising conductive metallic particles in a volatilizable carrier;

applying said slurry to the entire surface of said substrate containing said sintered glass pattern;

firing said substrate and slurry at a temperature below the softening temperature of said substrate to sinter said conductive metallic particles, soften said sintered glass pattern and causing said metallic particles to adhere only to said sintered glass pattern; and

removing the conductive metallic particles not adhering to said sintered glass pattern.

4,454,168

PRINTED CIRCUITS PREPARED FROM METALLIZED PHOTOADHESIVE LAYERS

Herbert L. Fritz, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,420

Int. Cl.³ H05K *3/18*

U.S. Cl. 427—96 **12 Claims**

1. A process for the preparation of electrically conductive circuits from an element having tacky and nontacky image areas present in a photoadhesive layer which comprises:

(a) applying particulate metal taken from the group consisting of zinc and aluminum to the tacky image areas of the element;

(b) optionally removing excess particulate metal; and

(c) contacting the metallized element with an aqueous solution at a pH in the range of 8 to 11.7 comprising cations of a plating metal which is more electronegative than said zinc or aluminum particulate metal to accomplish a metal-metal ion displacement reaction and being substantially free of any chemical reducing agent for said cations whereby there is provided a conductivity of at least about 1 to 2 mhos/square.

4,454,169

CATALYTIC PARTICLES AND PROCESS FOR THEIR MANUFACTURE

Jean Hinden, Chambesy; Michael Katz, Geneva, and Jurgen Gauger, Thonex, all of Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Apr. 5, 1982, Ser. No. 365,184

Claims priority, application United Kingdom, Apr. 9, 1981, 8111255

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—125 **14 Claims**

1. A process for converting particles of solid inert support material to particles having a catalytically active and stable surface comprising the steps of:

(a) wetting said particles of inert support material with an activating solution in an organic solvent of an organic prepolymer which can be thermally converted to an insoluble, electrically conducting polymer and an inorganic precursor which can be thermally converted to a platinum group catalyst,

(b) drying said particles to remove said solvent therefrom, and subjecting them to heat treatment so that said catalyst is obtained in finely dispersed form uniformly distributed within a matrix of the insoluble, electrically conducting polymer formed in situ on each of said particles and firmly attached thereto.

4,454,170

METHOD FOR TINTING A SHEET OF POLYURETHANE

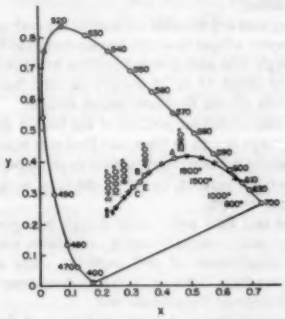
Serge Goepfert, Samoreau; Serge G. Marsaud, Veneux les Sablons; Serge A. M. Renault, Montigny-sur-Loing, and Francoise M. M. Roger, Avon, all of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,774

Claims priority, application France, Dec. 4, 1981, 81 22718; Jun. 17, 1982, 82 10582

Int. Cl.³ B05D *7/04, 3/40*; G02B *1/10, 5/22*

U.S. Cl. 427—160 **12 Claims**



1. A method of tinting a sheet of transparent polyurethane comprising a coloring operation followed by a fixation operation characterized in that the aforesaid coloring operation is carried out through immersion of the polyurethane into a bath held between about 80°-90° C. maintained under continuous agitation and formed of a dispersion of one or more colorants in an aqueous solution containing a surfactant or wetting agent, while the aforesaid fixation operation is carried out through rinsing in a boiling aqueous solution of sodium alkyl sulfonate.

4,454,171

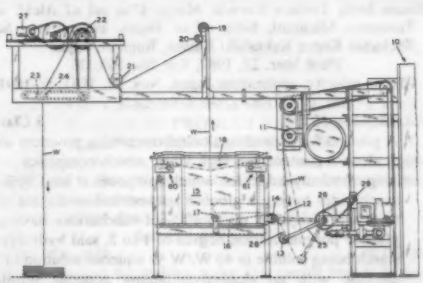
METHOD FOR WET PROCESSING, DRYING AND MOISTURE CONDITIONING TUBULAR KNITTED FABRIC

Edmund A. Diggle, Jr., Oradell, N.J., and Andrew P. Cecere, Valley Stream, N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Continuation of Ser. No. 214,202, Dec. 8, 1980, abandoned, which is a continuation of Ser. No. 27,919, Apr. 6, 1979, abandoned. This application Jan. 18, 1983, Ser. No. 458,989

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—209 **9 Claims**



1. The process of finish treating tubular knitted fabric, which comprises the steps of

(a) wet processing the fabric,

(b) force drying the fabric by the application of heat to a

moisture level substantially below the natural moisture level of the fabric being processed,

(c) immediately after drying the fabric, while the fabric is still in a hot and dry condition, moisture conditioning the dried fabric by guiding the fabric generally vertically and directing a finely atomized mist of water in liquid form toward opposite sides of the vertically disposed fabric web in a finely controlled, uniformly distributed manner across the full width of the fabric web to impart water to the fabric in a predetermined amount whereby the moisture level of the fabric after moisture application substantially corresponds to the natural moisture level regainable by the fabric after long-term normalization of the fabric under average atmospheric conditions,

(d) causing said imparted water to rapidly penetrate said fabric through the use of wetting agent means,

(e) immediately thereafter continuing the vertical guiding of said fabric for a predetermined period in the absence of significant contact by any apparatus structure with the surface of said fabric to facilitate water absorption by and penetration into the fabric, and

(f) thereafter guiding said fabric to a gathering station through an apparatus structure arranged and configured whereby the apparatus-fabric surface contact conditions are relatively uniform on opposite sides of the fabric, and gathering the fabric for further processing.

4,454,172

LINING METAL TUBING WITH A CORROSION- AND ABRASION-PROOF CEMENT MORTAR

Bruno Heinrich, and Wilhelm Schwenk, both of Duisburg, Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 20, 1983, Ser. No. 515,543

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227592

Int. Cl.³ B05D *7/22, 3/04, 3/12*

U.S. Cl. 427—234 **4 Claims**

1. A method for lining metal tubing with an abrasionproof and corrosionproof lining comprising the steps of:

Providing a blend of an alumina cement which includes at least 35 percent alumina and at the most 45 percent calcium oxide;

adding to the blend sand to obtain a mortar blend at a ratio between 0.5 and 3 of sand-to-cement;

applying the mortar blend to the interior of the tubing under compressing conditions;

exposing the lining to water for several hours; and

subsequently exposing the lining to steam.

4,454,173

METHOD FOR LINING PIPES IN A PIPELINE

Motoyuki Koga, Tokyo, Japan, assignor to Hakko Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 490,108

Claims priority, application Japan, Apr. 30, 1982, 57-74322; Apr. 30, 1982, 57-74323; Apr. 30, 1982, 57-74324; Apr. 30, 1982, 57-74325

Int. Cl.³ B05D *7/22*

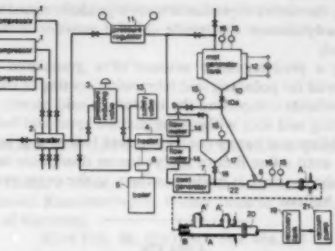
U.S. Cl. 427—235 **7 Claims**

1. A method for lining pipes in a pipeline comprising:

connecting an end opening of the pipeline to a vacuum generator;

supplying plastics mist to the other end opening of the pipeline;

sucking the air in the pipeline by said vacuum generator together with the plastics mist; and



recovering the residual plastics mist at the outlet end of the pipeline.

4,454,174

METHOD FOR LINING PIPES OF A PIPELINE

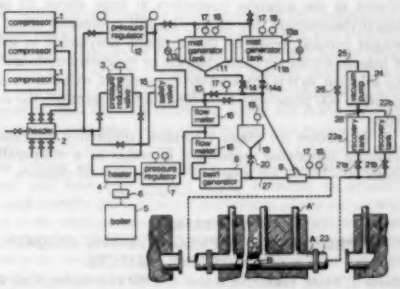
Motoyuki Koga, Tokyo, Japan, assignor to Hakko Co., Ltd., Tokyo, Japan

Filed May 23, 1983, Ser. No. 497,463

Claims priority, application Japan, May 31, 1982, 57-92574; May 31, 1982, 57-92575; May 31, 1982, 57-92576

Int. Cl.³ B05D *7/22*

U.S. Cl. 427—237 **3 Claims**



1. A method for lining pipes of a pipeline comprising:

connecting an end opening of the pipeline to a compressor and connecting the other end of the pipeline to a vacuum generator;

at a first stage, supplying mist of plastics having a low viscosity into the pipeline;

producing a carrier air flow in the pipeline at a low pressure by said compressor and vacuum generator;

at the next stage, supplying mist of plastics having a high viscosity into the pipeline; and

producing carrier air flow in the pipeline at a high pressure.

4,454,175

METHOD OF APPLYING LUBRICANT COATING TO BULLETS

Merrill D. Martin, 2 Mall Ct., Oakland, Calif. 94611

Continuation-in-part of Ser. No. 348,597, Feb. 12, 1982, abandoned. This application Aug. 5, 1983, Ser. No. 520,638

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—242 **7 Claims**

1. A method of applying a lubricating coating of molybdenum disulphide (MoS_2) to the outer surface of bullets comprising the steps:

placing a predetermined number of bullets in a tumbler containing a barrel;
adding a predetermined amount of spherical steel shot to said barrel;
mixing the above ingredients with a predetermined amount of molybdenum disulphide (MoS_2) powder within said barrel;
adding a predetermined amount of a granulated fibrous material for polishing said lubricating coating of the above ingredients completing the mixture in said barrel;
impacting said shot within said mixture upon said bullets by tumbling said barrel containing said bullets and said mixture until a fine film of molybdenum disulphide having a polished surface is made to adhere to the outer surface of said bullets.

4,454,176

SUPPORTED REVERSE OSMOSIS MEMBRANES

John J. Buckfelder, Wilmington, Del., and Henry M. Schleinitz, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 313,588, Oct. 21, 1981, abandoned. This application Oct. 14, 1982, Ser. No. 434,247

Int. Cl.[3] **B05D** *5/00;* **B29C** *23/00;* **B01D** *39/00, 39/14*

U.S. Cl. 427—246 **6 Claims**

1. In a process for the preparation of a reverse osmosis membrane by coating a solution of aromatic polyamide, solvent, and modifying salt onto a porous support, evaporating a portion of the solvent and coagulating the aromatic polyamide in the resulting membrane in a nonsolvent for the aromatic polyamide, the improvement wherein the porous support is a woven, unsized, polyester or aromatic polyamide fabric, the solvent in the solution comprises at least about 80 percent dimethylacetamide, the modifying salt comprises about 20–60 weight percent, based on the aromatic polyamide in solution, of lithium nitrate, lithium chloride or magnesium chloride, and the solution, as it is coated onto the support, exhibits a viscosity of 100 to 400 poise with little tendency to permeate the support fabric.

5. A process for claim 1 further comprising annealing the resulting supported membrane in water at a temperature of about 50°–75° C. for a period of about 15–60 minutes.

4,454,177

PROCESS TO IMPREGNATE THE CARBON CONSISTING OBJECTS

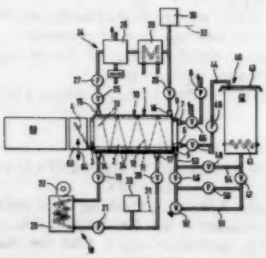
Horst J. Feist, Industriestrasse 4, 6969 Hardheim, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,466

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147040

Int. Cl.[3] **B05D** *1/18, 3/00, 3/02;* **C23C** *13/08*

U.S. Cl. 427—294 **10 Claims**



1. A method for impregnating porous articles to substantially eliminate the harmful gases resulting from such process, comprising the steps of:

(a) introducing said porous articles to an impregnating chamber;
(b) sealing said chamber to the outside atmosphere;
(c) heating said sealed chamber and said porous articles to a predetermined impregnating temperature by means of a heat exchanger;
(d) evacuating said chamber to remove gases, moisture, oil, etc. from said porous articles;
(e) introducing impregnating medium into said sealed chamber to fill said chamber;
(f) pressurizing said impregnating medium filling said sealed chamber;
(g) maintaining said pressure and impregnating temperature for a predetermined time;
(h) removing as much of said impregnating medium as possible after said predetermined time;
(i) cooling by means of said heat exchanger said sealed chamber and said articles to a temperature less than the temperature at which harmful gases will be emitted by said impregnating medium; and
(j) removing said impregnated articles from said chamber.

4,454,178

POLY(ACETYLENE) FILMS AND THEIR PRODUCTION

Herbert Naarmann, Wattenheim; Dieter Naegele, Worms, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,578

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143868

Int. Cl.[3] **C08G** *65/00, 67/00;* **C08F** *38/00*

U.S. Cl. 427—302 **3 Claims**

1. A process for the production of reinforced poly(acetylene) film which comprises the following steps in sequence:

(a) impregnating a firm, fibrous, base material consisting of filaments, fibers, woven or knitted fabrics, non-wovens, laid webs, interlaced structures or nets with an active transition metal polymerization catalyst;
(b) contacting said catalyst impregnated, base material with acetylene gas or a gaseous mixture of acetylene with di- and/or a polyalkyne wherein a polymeric film of poly-(acetylene) is caused to form onto, and to bond firmly with, said base material;
(c) treating the resulting reinforced, film product with a solvent to extract said polymerization catalyst therefrom, and thereafter;
(d) drying said product to remove the solvent residue therefrom.

4,454,179

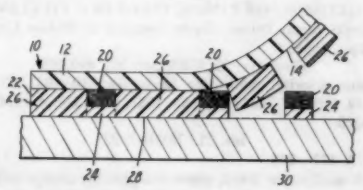
DRY TRANSFER ARTICLE

Richard E. Bennett, and Donald V. Flatt, both of Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 10, 1982, Ser. No. 376,400

Int. Cl.[3] **C09J** *7/02;* **B32B** *3/00*

U.S. Cl. 428—41 **21 Claims**



1. A dry transfer article for application to a substrate to provide a design thereon, such article comprising a continuous,

actinic radiation transparent carrier film presenting a major surface having first and second surface portions thereon, a graphic pattern comprising at least one layer of a radiation opaque, compatible ink composition bonded to said first portions of said major surface of said carrier film, and a continuous, actinic radiation responsive layer of adhesive having first segments covering ink composition containing said first portions and second segments covering non-ink composition containing said second portions, said adhesive upon exposure of said second segments to actinic radiation through said second surface portions being capable of providing a bond to said carrier whereby, upon adhering of said article to said substrate, application of a peel force to said carrier film allows selective separation from said substrate of said carrier film together with exposed second segments of said adhesive along the edge of said ink composition, leaving on said substrate said ink composition and unexposed first segments of said adhesive.

4,454,180

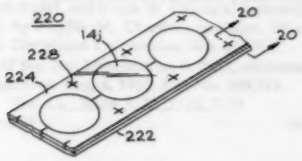
LABELLING SYSTEM

Herbert La Mers, 2317 La Palma Dr., Ventura, Calif. 93003

Continuation of Ser. No. 134,626, Mar. 27, 1980, abandoned, which is a division of Ser. No. 866,455, Jan. 3, 1978, Pat. No. 4,217,164, which is a continuation of Ser. No. 618,690, Oct. 10, 1975, abandoned. This application Mar. 15, 1982, Ser. No. 357,921

Int. Cl.³ B32B *3/16;* **G09F** *3/02, 3/10*

U.S. Cl. 428—42 **4 Claims**



1. An elongated label strip suitable for use with motor driven first and second sprocket rollers for sequentially delivering labels to a mechanism operable to apply each delivered label to an object conveyed therepast, said label strip comprising:

first and second elongated carrier strip portions, each having first and second elongated edges, said carrier strip portions being positioned parallel to and closely spaced from one another to define a separation line between adjacent edges of said respective carrier strip portions;

said first carrier strip portion defining a plurality of uniformly spaced cuts therein aligned parallel to said separation line for cooperatively receiving the sprockets of said first roller;

said second carrier strip portion defining a plurality of uniformly spaced cuts therein aligned parallel to said separation line for cooperatively receiving the sprockets of said second roller; and

a multiplicity of labels carried by and spaced along said carrier strip portions with each label being releasably adhered to both said first and second carrier strip portions so as to bridge said separation line therebetween.

4,454,181

RESILIENTLY DEFORMABLE SAFETY COVERING TILE

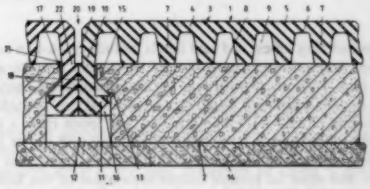
Werner Hohn, Weimar, Fed. Rep. of Germany, assignor to Wegu Gummi-U. Kunststoffwerke Walter Drabing KG, Kassel, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,790

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1982, 3231779

Int. Cl.³ B32B *3/02, 3/30*

U.S. Cl. 428—68 **4 Claims**



1. A resiliently deformable safety covering tile comprising a rigid base having a top surface, a bottom surface and a peripheral ledge, and a resiliently deformable cover that has an upper tile portion from which a plurality of spacers extend downwardly into contact with said base top surface and a peripheral edge portion that depends from said upper tile portion downwardly beside said base ledge to terminate at a position above said base bottom surface, and with said cover peripheral edge portion having an area of reduced cross-sectional thickness adjacent said base top forming a gap between an adjacent cover and thereby permit lateral movement of the cover with respect to an adjacent cover, a reentrant bend portion located beneath said base ledge in spaced relation with base to anchor said cover to said base while permitting air flow from between said cover spacers to a cavity located beneath said cover peripheral edge portion, and an outwardly extending projection located beneath said area of reduced cross-sectional thickness adapted to be placed flush against the same projection of an adjacent tile of the same construction.

4,454,182

Patent Not Issued For This Number

4,454,183

STRIP MATERIAL WITH HEAT-FORMED HOOKED HEADS

Sandford L. Wollman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

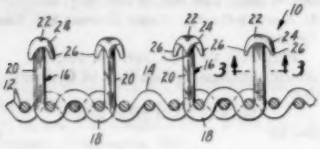
Continuation of Ser. No. 352,850, Feb. 26, 1982, abandoned. This application Oct. 20, 1983, Ser. No. 543,786

Int. Cl.³ A44B *17/00*

U.S. Cl. 428—92 **4 Claims**

1. In an elongate strip material which can be severed into lengths to form at least a part of a fastener, said strip material comprising a backing having an exposed major surface; and a

multiplicity of flexible resilient lengths of longitudinally oriented polymeric monofilament, each length including a central bight portion secured in said backing, two stem portions extending from the opposite ends of said bight portion and projecting generally normal to said exposed major surface and enlarged heads at the ends of said stem portions opposite said backing adapted to engage loops projecting from a surface closely positioned in opposition to the exposed major surface of the backing, the improvement wherein said lengths of monofilament have a cross section defining a plurality of radi-



ally projecting lobes, and said heads include hook-like portions spaced from said stem portions and projecting a distance along said stem portions toward said backing formed by heating the ends of said lengths of monofilament so that each of said lobes forms one of said hook-like portions and loops from a surface closely positioned in opposition to the exposed major surface of the backing will engage under the hook-like portions of said heads and must be broken before separation of the loops and heads can occur in a direction normal to said exposed major surface of the backing.

4,454,184

SHEET MATERIAL COMPRISING LAYERS OF ALIGNED STRANDS COMPLETELY SURROUNDED BY ADHESIVE

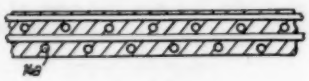
Arthur Britton, 4 The Sycamores, Bramhope, Leeds, LS16 9JR Yorkshire, England

Continuation of Ser. No. 145,809, May 1, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,649

Claims priority, application United Kingdom, May 5, 1979, 7915750

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—110 **15 Claims**



1. A sheet material comprising a first layer having a plurality of aligned spaced apart strands disposed in and completely surrounded by a mass of an adhesive, a second layer having a plurality of aligned spaced apart strands disposed in and completely surrounded by a mass of an adhesive, superposed on the first layer with its strands lying transverse to the strands of the first layer and a third layer having a plurality of aligned spaced apart strands disposed in and completely surrounded by a mass of an adhesive with its strands disposed transversely to the strands in the second layer, wherein said strand is of spun fibers, one or more continuous filaments or a mixture thereof, the superposition being such that the overall length of each strand remains substantially unchanged, whereby to produce, for a given weight per unit area of material, a material of greater tear strength in at least one direction than a synthetic plastics material coated textile material woven from strands of the same material.

4,454,185

TRIDIMENSIONAL METAL MESHWORK AS REINFORCEMENT FOR BUILDING PANELS AND A METHOD FOR THEIR MANUFACTURE

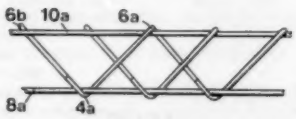
Jean-J. Beaumond, La Levratte 18, 1260 Nyon, Switzerland

Filed Jul. 16, 1982, Ser. No. 399,104

Claims priority, application Switzerland, Jul. 28, 1981, 4893/81; Sep. 30, 1981, 6300/81

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—121 **13 Claims**



1. Tridimensional meshwork for building panels, comprising at least two parallel layers of netting and at least one obliquely oriented spacing system located in such manner that at least a significant portion of said spacing system is disposed between said parallel layers of netting, each unit of said spacing system is made of a single elongated member having a shape of a zig-zag which is disposed in tridimensional directions, alternate elbows of each spacing unit are situated in at least two different planes and fixedly attached to said nettings.

4,454,186

PRIMED SURFACE AND CHARGE TRANSFER MEDIA

William A. Hendrickson, St. Paul; Dudley M. Sherman; Hsin-hsin Chou, both of Woodbury, and Vasant V. Kolpe, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 3, 1982, Ser. No. 345,403

Int. Cl.³ B32B *3/14, 3/16*; G03G *5/14*

U.S. Cl. 428—148 **20 Claims**

1. An article comprising a substrate having on at least one surface thereof uncoated discrete sites of an inorganic material different from the composition of said at least one surface which prime the surface according to ANSI/ASTM D 903–49 and/or increase the electrostatic charge transfer efficiency of the surface, said discrete sites having a bulk resistivity of less than 1×10^{18} ohm-cm, an average length of between 1.0 and 20 nm and covering between 0.1 and 40% of said surface.

4,454,187

COMPOSITE LAMINATE MATERIAL AND PROCESS FOR MAKING THE SAME

Thomas A. Flowers, Royal Oak; Samuel D. Vinch, Lake Orion, and Chandru T. Shahani, Sterling Heights, all of Mich., assignors to Allen Industries, Inc., Troy, Mich.

Continuation of Ser. No. 167,294, Jul. 10, 1980, abandoned. This application Jun. 22, 1983, Ser. No. 506,749

Int. Cl.³ B32B 3/26

U.S. Cl. 428—159 14 Claims

1. A process for making a composite laminate material which comprises the steps of

(a) providing an unbonded fibrous batt of desired thickness having a thermosetting binder material dispersed therethrough;

(b) applying a layer of desired thickness of a cureable latex to at least one side of said fibrous batt;

(c) drying said layer to a predetermined moisture level to provide a dried composite material; and

(d) heating and compression molding said dried composite material to simultaneously mold said composite, cure said layer and cure said binder material by embossing a pattern into the exposed side of said layer before said layer and said binder material are cured to cause said layer to be contoured with said pattern substantially throughout the thickness thereof and thereby cause said pattern to be substantially impressed into said one side of said batt so that the resulting embossed and cured layer has a substantially uniform thickness and said one side of said cured batt substantially conforms to the embossed contour of said layer.

11. The product of the process of claim 1.

4,454,188

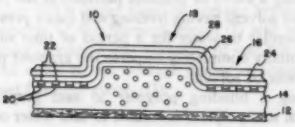
HIGH REFLECTIVITY IN FLOORING AND OTHER PRODUCTS

Vincent L. Penta, Newark; Joseph Boda, Fort Lee; Robert P. Conger, Park Ridge, and Ralph W. Charlton, deceased, late of Rutherford, by Phyllis M. Charlton, executor, all of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Continuation of Ser. No. 338,184, Jan. 8, 1982, abandoned. This application Aug. 4, 1983, Ser. No. 519,892

Int. Cl.³ B32B 3/22, 3/26, 5/18

U.S. Cl. 428—172 10 Claims



1. A decorative surface covering having a metallic appearance comprising a base sheet, a first layer of resinous composition on one surface of the base sheet, an adhesive coating located on said first layer in the form of a plurality of spaced-apart fine discrete dots or other shapes such that the resinous composition is exposed to view in the areas not covered with adhesive dots, a plurality of discontinuous metal films covering only said discrete adhesive dots, and a transparent or translucent second resinous composition surface wear layer covering and surrounding each metal film and fused directly to said first resinous composition thereby encapsulating each discrete metal film and securely binding it to the base sheet.

4,454,189

SHEET OF POLYPHENYLENE SULFIDE FILAMENTS AND PROCESS FOR PRODUCING THE SAME

Shunsuke Fukata, Kusatsu, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP81/00145, 371 Date Feb. 8, 1982, 102(e) Date Feb. 8, 1982, PCT Pub. No. WO82/00163, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 24, 1981, Ser. No. 348,007

Claims priority, application Japan, Jun. 27, 1980, 55-86568

Int. Cl.³ D01D 5/10; D04H 3/10

U.S. Cl. 428—224 20 Claims

1. A sheet of polyphenylene sulifide filaments which comprises randomly dispersed and accumulated polyphenylene sulfide filaments, each having a fineness of 0.1 to 15 denier, a dry heat shrinkage of about 5–50% at 140° C. and a strength greater than 1.5 g/d, wherein said filaments are made of a linear polymer having a degree of crosslinking and branching as defined by the non-Newtonian constant n of $0.9<n<2.0$ as defined by the formula

$$r = \frac{1}{\mu} T^n$$

wherein r is shear rate, T is shear force and μ is viscosity.

7. A web of polyphenylene sulfide filaments to be bonded or interlocked comprising randomly dispersed and accumulated polyphenylene sulfide filaments, wherein said filaments are 0.5 to 5 denier, said web has an area shrinkage of 5 to 80% and, said filaments have a dry heat shrinkage of about 5–40% at 140° C. and a strength greater than 1.5 g/d, said filaments are made of a linear polymer having a degree of cross-linking and branching as defined by the non-Newtonian constant n of $0.9<n<2.0$ as defined by the formula

$$r = \frac{1}{\mu} T^n$$

wherein r is shear rate, T is shear force and μ is viscosity.

12. A process for producing a sheet of polyphenylene sulfide filaments which comprises extruding a polyphenylene sulfide polymer from a plurality of small holes at a temperature 20° to 85° C. higher than the melting point of the polyphenylene sulfide polymer, drawing apart the extrudate from the small holes at a rate greater than 1300 m/min by a high-velocity air stream, simultaneously causing the resulting filaments to be opened by electrostatic charge, collecting the opened filaments on a plane, and bonding or interlocking the collected filaments.

4,454,190

EXPANDABLE CERAMIC FIBER FELT WITH GRAPHITE FLAKES

Masayuki Katagiri, Toyokawa, Japan, assignor to Isolite Babcock Refractories Co., Ltd., Aichi, Japan

Filed Sep. 17, 1982, Ser. No. 419,346

Claims priority, application Japan, Sep. 29, 1981, 56-154146

Int. Cl.³ D04H 1/08

U.S. Cl. 428—281 2 Claims

1. An expandable ceramic fiber felt comprises (a) ceramic fiber; (b) expandable graphite flakes having an average particle size from 0.5 to 2 millimeters uniformly dispersed in the ceramic fiber felt in such a manner that the greater surface area of the graphite flakes is parallel to the orientated direction and perpendicular to the thickness direction of the ceramic fiber, said graphite flakes present in amounts of about 2–20 weight percent based on the total weight of the ceramic fiber and graphite flakes, and (c) an organic binder which softens at the temperature at which the expandable ceramic felt begins to expand.

4,454,191
WATERPROOF AND MOISTURE-CONDUCTING FABRIC COATED WITH HYDROPHILIC POLYMER

Hubert von Blücher, Freytagstrasse 45; Hasso von Blücher, Sohnstrasse 58, both of D-4000 Düsseldorf, and Ernest de Ruiter, Höhenstrasse 57a, D-5090 Leverkusen 3, all of Fed. Rep. of Germany

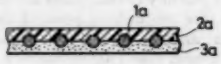
Filed Aug. 17, 1982, Ser. No. 408,986
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132324
Int. Cl.³ A61L 15/00
U.S. Cl. 428—244 14 Claims

1. A waterproof and moisture-conducting fabric comprising a textile base permeable to water vapor and sealed with a closed airtight and liquid-tight coating layer of a hydrophilic polymer having enough hydrophilic hydroxyl, ether, amine and/or carboxyl groups for absorbing water at points of high partial pressure, effecting migration of said water within the layer in the form of water molecules to points of low partial pressure, and releasing it in the form of water vapor again at the surface of the fabric, the coating being capable of storing 200 to 400% of its weight in moisture and allowing passage of at least 500 g/m² of water vapor per day.

4,454,192
PRESSURE SENSITIVE ADHESIVE TAPE

Nagayuki Suzuki, Tokyo, Japan, assignor to Sugawara Industrial Co., Kanagawa, Japan

Filed Mar. 15, 1982, Ser. No. 358,421
Claims priority, application Japan, Nov. 16, 1981, 56-183452
Int. Cl.³ D04H 1/74; C09J 7/02
U.S. Cl. 428—294 8 Claims



1. A flexible pressure sensitive adhesive sheet including a supporting sheet made of a thermoplastic resinous material, a plurality of artificial filament yarns arranged substantially parallel to the longitudinal direction of said supporting sheet with a predetermined space provided therebetween, said filament yarns being buried in one side of said supporting sheet up to at least about one-half of their cross-sections, thereby strongly adhering the filament yarns to said sheet, and a pressure sensitive adhesive layer provided on said filament yarn containing side of the sheet, whereby the artificial filament yarns are embedded in both the supporting sheet and the adhesive layer, thereby providing a high tensile strength in the longitudinal direction of the tape.

4,454,193
CARBON-METAL PHOSPHATE ESTER COMPOSITE AND METHOD OF MAKING

Michael J. Block, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

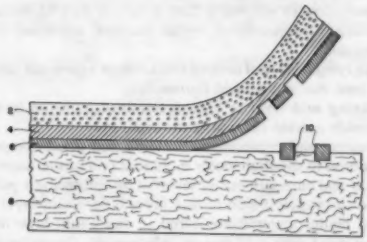
Filed Feb. 28, 1983, Ser. No. 470,548
Int. Cl.³ B32B 9/04, 31/00
U.S. Cl. 428—322.7 28 Claims

1. An article comprising a carbon body having the metaphosphate reaction product of a triester of phosphoric acid and a metal salt distributed therethrough and coating the surface thereof.

4,454,194
LYOPHILIZATION PROCESS FOR PREPARING COMPOSITE PARTICLES FOR USE IN ELECTROCONDUCTIVE TRANSFER FILMS AND PRODUCTS PRODUCED THEREWITH

Ray H. Luebbe, Jr., Maitland, Fla., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 6, 1982, Ser. No. 395,584
Int. Cl.³ B32B 5/16; B41C 3/08; B41M 5/00; G03G 5/00, 5/02
U.S. Cl. 428—323 19 Claims



1. A method for the preparation of conductive graphite particles useful as an electrically anisotropic support layer for an electroconductive transfer film comprising:

(a) grinding a slurry of graphite particles in the presence of water or solvent having freezing and vapor pressure properties similar to water for a period of time sufficient to substantially completely disperse the graphite particles in said water or solvent;

(b) adding a binding polymer to said graphite slurry either as part of Step (a) or immediately after Step (a), wherein said polymer is soluble in said water or solvent;

(c) freezing said slurry; and

(d) drying said slurry wherein said water or solvent present is caused to sublime resulting in the formation of polymeric coated graphite particles wherein at least a substantial portion of these particles have a diameter of at least 0.2 microns.

10. An electrically anisotropic support layer produced by a process which comprises:

(a) grinding a slurry of graphite particles in the presence of water or solvent having freezing and vapor pressure properties similar to water for a period of time sufficient to substantially completely disperse the graphite particles in said water or solvent;

(b) adding a blinding polymer to said graphite slurry wherein said polymer is soluble in said water or solvent;

(c) freezing said slurry;

(d) drying said slurry wherein said water or solvent present is caused to sublime resulting in the formation of polyeric coated graphite particles wherein at least a substantial portion of these particles have a diameter of at least 0.2 microns; and

(e) casting said coated graphite particles onto a support layer for an electroconductive transfer film.

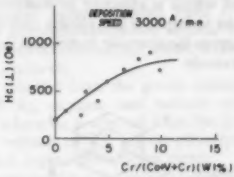
18. An electric discharge transfer material comprising a transfer layer in the form of a resin layer capable of being broken by electric discharge and laminated to an electrically anisotropic support layer, as defined in claim 10.

4,454,195

MAGNETIC RECORDING MEDIUM

Kazumasa Fukuda, and Yoshimi Kitahara, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,236
Claims priority, application Japan, Aug. 27, 1981, 56-134650
Int. Cl.³ G11B 5/70
U.S. Cl. 428—336 8 Claims



1. A magnetic recording medium having a magnetic recording layer comprising from 75 to 90% by weight of Co and up to 5% by weight of Cr, the rest being V, said magnetic recording layer having an easy magnetization axis in the perpendicular direction to the layer surface, being of a thickness of from 2000 Å to 2μ, and having a coercive force of at most 600 Oe.

4,454,196

POLYESTER MULTIFILAMENT YARN AND A PROCESS FOR MANUFACTURING THE SAME

Kohichi Iohara, and Michikage Matsui, both of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 302,952, Sep. 16, 1981, Pat. No. 4,410,743.
This application Sep. 27, 1982, Ser. No. 424,254
Claims priority, application Japan, Sep. 25, 1980, 55-132254
Int. Cl.³ D02G 3/00
U.S. Cl. 428—359 5 Claims

1. A polyester multifilament yarn consisting essentially of: a filament group (I) comprised of at least one polyester selected from the group consisting of polyethylene terephthalate polytrimethylene terephthalate polytetramethylene terephthalate blends thereof and copolymers comprising at least two members selected from said polyesters; and a filament group (II) comprised of a polyester substrate selected from the group consisting of polyethylene terephthalate, polytrimethylene terephthalate, polytetramethylene terephthalate, blends thereof and copolymers comprising at least two members selected from said polyesters and from about 0.4 to 8% by weight based on the substrate of at least one polymer selected from the group consisting of styrenic polymers, methacrylate polymers and acrylate polymers added to said substrate wherein the average breaking elongation of filaments of the filament group (II) is larger than the average breaking elongation of filaments of the filament group (I) and wherein the average denier of constituent filaments of said filament group (I) is at least equal to the average denier of constituent filaments of said filament group (II).

4,454,197

ELECTRICAL CONDUCTOR COATED WITH A WATER-BORNE HERMETIC VARNISH

Deno Laganis, Schenectady, and John Yodis, Amsterdam, both of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 311,387, Oct. 14, 1981, Pat. No. 4,433,080.
This application Jul. 22, 1983, Ser. No. 516,256
Int. Cl.³ B32B 15/00, 25/00; H01B 7/00
U.S. Cl. 428—379 14 Claims

1. An electrical conductor coated with the product obtained by curing on the conductor hydrolytically stable, heat-curable hermetic varnish which consists essentially of an aqueous solution of (1) a water-reducible, epoxy adduct, which is a reaction product of

(A) an epoxy resin which is a glycidyl ether of a dihydric phenol containing 1.3 to 2 epoxide groups per molecule, and having an epoxy equivalent of about 600 to 1200

(B) aminobenzoic acid in an amount of 0.60 to 1.50 moles per epoxide equivalent weight,

(C) a water-soluble organic solvent having a boiling point above 150° C. which is a glycol ether, a glycol ether carboxylic acid ester, an unsubstituted ketone or a ketone alcohol or a blend of such a solvent with (1) up to 35% of a glycol ether, (2), up to 35% of an alkanol boiling below 150° C. or (3) up to 35% of a glycol ether and an alkanol boiling below 150° C.

(D) sufficient quantity of a water soluble amine which is a tertiary alkyl amine, morpholine, N-(2-hydroxyethyl) morpholine or an alkanolamine to render the epoxy adduct soluble in water, (2) a water soluble or water reducible phenolic cross-linking agent which is a 2,2-bis(4-hydroxyphenyl) propaneformaldehyde resin, having a 2,2-bis(4-hydroxyphenyl)propane to formaldehyde ratio of 1:20 to 1:3.5 on a molar basis, the phenolic cross-linking agent being 10 to 60% of the total of the phenolic and epoxy resin coating solids, the coating solids being not over 60% of the aqueous solution, the organic solvent being 30 to 90% of the total of organic solvent and water.

4,454,198

POROUS, POWDERY POLYPROPYLENE

Walter Fickel, Erlenbach, and Gerhard Ries, Obernburg, both of Fed. Rep. of Germany, assignors to Akzo nv, Arnhem, Netherlands

Division of Ser. No. 279,045, Jun. 30, 1981, Pat. No. 4,379,860.
This application Feb. 7, 1983, Ser. No. 464,740
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026762
Int. Cl.³ C08J 9/26
U.S. Cl. 428—402 12 Claims

1. Porous, powdery polypropylene having an apparent density of 0.1 to 0.3 g/cm³, a particle size of 5–700 μm, and an external porosity of 70–85% obtained by providing a hot solution of polypropylene in pentaerythrol ester as solvent, slowly cooling said solution down to approximately room temperature to provide a solidified mass with or without affecting mechanical size reduction of said solidified mass, and extracting said solidified mass with an extractant in which pentaeryhtrol is soluble, with or without subsequently removing said solvent to a high degree.

4,454,199

CONDUCTIVE HIGH-PRESSURE LAMINATE AND METHOD OF PREPARATION

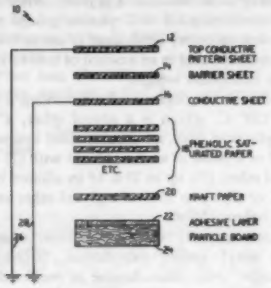
George R. Berbeco, West Newton, Mass., assignor to Charleswater Products, Inc., West Newton, Mass.

Continuation-in-part of Ser. No. 442,277, Nov. 17, 1982. This application Jan. 25, 1983, Ser. No. 460,860
Int. Cl.³ B32B 7/02; B29D 9/06
U.S. Cl. 428—322.2 22 Claims

1. In a synthetic surface-covering laminate sheet material which comprises a plurality of cured, resin-saturated paper materials, including a top sheet material, laminated together under heat and pressure to form a hard thermoset resin laminate sheet material having a hard top surface suitable for use as a surface covering, the improvement which comprises:

the laminate comprising one or more paper materials containing an electrically conductive, static-dissipating

amount of a quaternary ammonium compound present in an amount to provide a laminate having a top surface



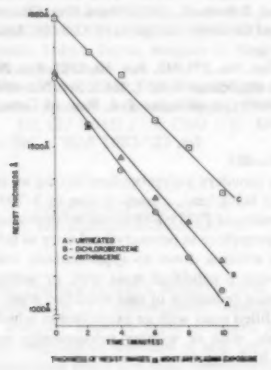
resistivity of 10^9 ohms per square inch or less, when tested in accordance with ASTM-D257.

4,454,200

METHODS FOR CONDUCTING ELECTRON BEAM LITHOGRAPHY

Emile M. Bellott, Jr., Beverly, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 3, 1983, Ser. No. 471,577
Int. Cl.³ B32B *9/04*; G03C *5/00*
U.S. Cl. 428—411.1 **19 Claims**



1. An article of manufacture comprising a substrate having a polymeric resist thereon, said polymeric resist having been impregnated with a volatile aromatic compound by vapor diffusion, said impregnated resist having improved resistance to plasma etching, wherein the aromatic compound is of the following general formula:

wherein any of the R groups can be hydrogen, halogen, alkyl of 1 to 7 carbons, alkoxy, phenyl, or any two or more of the R groups can be alkylene chains of 3 to 4 carbon atoms to form one or more fused rings on the basic benzene nucleus.

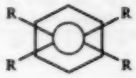
12. A method for forming a predetermined surface relief pattern in a film of a resist material, by electron beam lithography, said method comprising the steps of:

(a) providing a film of polymeric material as a resist material on a substrate;

(b) exposing a portion of the film corresponding to said predetermined pattern to electron beam radiation which changes the solubility of the exposed portion with respect to the unexposed portion;

(c) dissolving the more soluble portion of the film with a developer solution to provide said relief pattern;

(d) exposing the developed resist to the vapor of an aromatic compound which is effective to dissolve into the polymeric resist to improve the plasma etch durability of the resist, wherein the aromatic compound is of the following general formula:



wherein any of the R groups can be hydrogen, halogen, alkyl of 1 to 7 carbons, alkoxy, or any two or more of the R groups can be alkylene chains of 3 to 4 carbon atoms to form one or more fused rings on the basic benzene nucleus; and

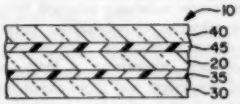
(e) subjecting the resist to a plasma etch to etch out the unprotected areas on the substrate.

4,454,201

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF BOROXINES AND INTERLAYERS OF MERCAPTAN RESINS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 232,054, Feb. 5, 1981, Pat. No. 4,343,928, which is a continuation-in-part of Ser. No. 070,390, Aug. 28, 1979, Pat. No. 4,294,886, and Ser. No. 204,424, Nov. 6, 1980, Pat. No. 4,352,848, said Ser. No. 204,424, is a continuation-in-part of Ser. No. 070,390,. This application Jul. 1, 1982, Ser. No. 394,204
Int. Cl.³ B32B *27/38*
U.S. Cl. 428—413 **1 Claim**

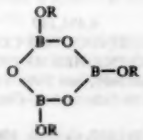


1. A transparent composite having resistance to intense heat, comprising:

a transparent layer of a reaction product of a blend having

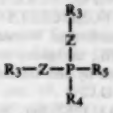
(a) from about 80 to about 100 parts by weight of an epoxy resin;

(b) from about 5 to about 30 parts by weight of a boroxine having the formula:



where R is a compound having from 1 to 18 carbon atoms, and

(c) from about 1 part to about 40 parts by weight of an organic phosphorus compound having the following formula:



where R_3 is selected from the group consisting of hydrocarbon radicals having from 1 to 24 carbon atoms, halo-substituted organic radicals having from 1 to 24 carbon atoms, and multihalo-substituted organic radicals having from 1 to 24 carbon atoms; and where R_3 may be the same or different radicals;

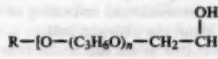
where R_4 is selected from the group consisting of all the radicals of R_3, oxygen, and radicals of the formula: —O—R_6, where R_6 is selected from the group consisting of all the radicals of R_3, organo-phosphorus polymeric radicals, and organo-phosphorus esters;

where R_5 is selected from the group consisting of hydrogen, hydroxyl, oxygen, sulfur, halogens or no radical at all;

where Z is selected from the group consisting of oxygen, sulfur, or no radical at all; and

wherein said transparent blend is contiguously contacting at least one layer of a composition resistant to moisture permeation;

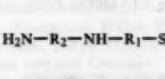
said composition having about 100 parts by weight of a mercaptan resin having the following formula:



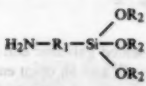
where R is an aliphatic hydrocarbon having from 1 to 18 carbon atoms and where n is 1 or 2;

(a) from about 40 to about 250 parts by weight of an epoxy resin; and

(b) from about 0.5 parts by weight to about 4.0 parts by weight of a silane selected from the group consisting of: N-aminoakyl-aminoalkyl-trialkoxysilanes of the formula:



wherein R_1 is an alkylene having 1–6 carbon atoms and R_2 is an alkyl, having 1–6 carbon atoms, and amino-alkyl-trialkoxysilanes of the formula:



wherein R_1 and R_2 are as defined above, and combinations thereof.

4,454,202

MAGNETIC RECORDING MEDIUM

Shigeo Komine; Kazuhiko Morita, and Nobuo Tsuji, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1981, Ser. No. 315,555
Claims priority, application Japan, Oct. 27, 1980, 55-150549
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—423.1 **7 Claims**

1. A magnetic recording medium, comprising:

a base; and

a magnetic paint applied to a surface of said base, said magnetic paint comprising a three-component binder consisting essentially of 30 to 70% of polyurethane having a terminal OH group, 10 to 50% of an epichlorohydrin/diphenylolpropane polycondensate and 10 to 50% of a copolymer selected from the group consisting of a vinyl chloride/vinyl acetate copolymer, vinyl chloride/vinyl acetate/maleic acid copolymer and vinyl chloride/vinyl acetate/vinyl alcohol copolymer, the percentages being based on the weight of the binder.

4,454,203

PRESSING PLASTIC WITH EXTENSIBLE COATING

Helmut Franz; James H. Hanlon, both of Pittsburgh, and Lloyd G. Shick, Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 210,099
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—520 **3 Claims**

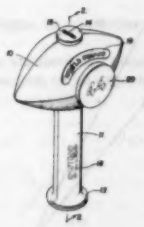
1. In a method of processing a polymethylmethacrylate substrate comprising a step of pressing, the improvement which comprises coating the exterior surface of the substrate prior to pressing with a film of a more extensible longer chain alkylacrylate.

4,454,204

NOVELTY NOISEMAKER AND BANK

Mervin E. Posey, 3203 Walters La., #204, Forestville, Md. 20028

Filed Mar. 15, 1983, Ser. No. 475,627
Int. Cl.³ A63H *5/00*
U.S. Cl. 428—542.4 **3 Claims**



1. A combined coin bank, noisemaker and display device comprising a hollow bulbous head portion having the shape and appearance of an athletic team ball and having a plurality of exterior indicia bearing surfaces upon which the name of an athletic team and other identifying indicia pertaining to such team may be placed, the bulbous head portion having a coin deposit slot substantially in its forward face, a hollow elongated handle integrally joined to the head portion and extending from the side thereof which is rearward from and opposite to the coin slot, the interiors of the handle and head portion being in open communication to form a common chamber for coins and also forming a noisemaker chamber to amplify sound generated by the rattling of coins within said chamber, a removable closure element for the end of the hollow handle distal from the head portion to enable periodic removal of coins from said chamber, an enlarged flange on said distal handle end to enable secure handling of the device when used as a noisemaker and to stabilize the device when it is placed on a support surface, and the entire device being molded as a unit from plastics material, except for the removable closure plug.

4,454,205

METHOD OF DRILL BIT MANUFACTURE AND PRODUCT

Ronald R. Miller, Beaverton; William R. Barber, Jr., Portland, both of Oreg.; David A. Hampel, Vancouver, Wash., and James E. Ault, Portland, Oreg., assignors to ESCO Corporation, Portland, Oreg.

Filed Oct. 9, 1981, Ser. No. 310,226
Int. Cl.³ B22F 7/08
U.S. Cl. 428—556 12 Claims

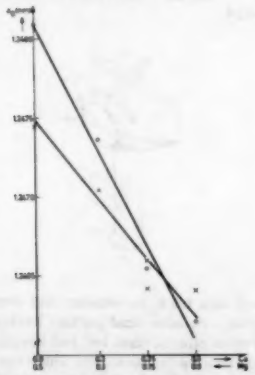
1. A method of providing a bit body suitable for drilling and the like comprising the steps of providing a plurality of tungsten carbide elements, coating the same with a carbide compound wherein the cation is selection from groups III and IV of the Periodic Table, and casting the same in molten steel to support the elements in partially exposed condition, said elements having a contour to provide an internal lock with said steel.

4,454,206

MAGNETIC DEVICE HAVING A MONOCRYSTALLINE GARNET SUBSTRATE BEARING A MAGNETIC LAYER

Dieter Mateika, Ellerbek, and Rolf Laurien, Pinneberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 168,227, Jul. 14, 1980, Pat. No. 4,379,853.
This application Jul. 22, 1982, Ser. No. 401,032
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928176; Mar. 7, 1980, 3008706
Int. Cl.³ G11B 5/64; C04B 35/50
U.S. Cl. 428—692 4 Claims



1. A magnetic device having a monocrystalline rare earth metal gallium garnet substrate bearing a monocrystalline magnetic layer of garnet material, characterized in that the substrate has the composition

$$A^{3+}_{3-x}B^{2+}_{x}Ga^{3+}_{5-x-2y}C^{2+}_{y}D^{4+}_{x+y}O_{12},$$

in which

A=gadolinium and/or samarium and/or neodym and/or yttrium

B=calcium and/or strontium

C=magnesium

D=zirconium and /or tin

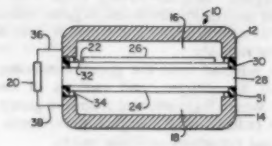
$O<x\leqq 0.7$; $O<y\leqq 0.7$ and $x+y\leqq 0.8$.

4,454,207

STEAM REFORMING OF FUEL TO HYDROGEN IN FUEL CELLS

Anthony V. Fraioli, Hawthorne Woods, and John E. Young, Woodridge, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 13, 1983, Ser. No. 513,523
Int. Cl.³ H01M 8/10
U.S. Cl. 429—17 8 Claims



1. A fuel cell comprising

a solid electrolyte,

an anode and a cathode separated by the electrolyte,

a reforming catalyst supported by and thermally connected to the anode opposite the electrolyte,

first and second housing members arranged about the electrolyte, anode, reforming catalyst and cathode to define a first chamber about the anode and reforming catalyst and a second chamber about the cathode, and

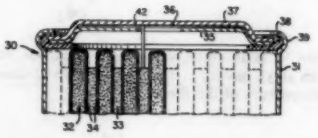
means for directing a hydrocarbon fuel to the first chamber and an oxidant to the second chamber.

4,454,208

PRESSURE CONTACT TAB/COVER CONSTRUCTION FOR ELECTROCHEMICAL CELLS

Victor R. Osmialowski, Brook Park, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1983, Ser. No. 480,694
Int. Cl.³ H01M 2/20
U.S. Cl. 429—163 8 Claims



1. A compression sealed galvanic cell including a container having a base, a sidewall and an open end, and housing a first electrode in electrical contact with said container, a second electrode, a separator between the electrodes and electrolyte therein in ionic contact with said first electrode and said second electrode; an electrically conductive tab having a first end and a second end, said second end extending to and being in electrical contact with said second electrode; and a top cover assembly comprising an inner cover having at least one aperture therein through which electrolyte can be dispensed into said container and an outer electrically conductive cover positioned over said inner cover, at least a portion of the inner surface of the outer cover being contiguously associated with the corresponding outer surface of the inner cover; characterized in that said first end of the electrically conductive tab is positioned through an aperture in the inner cover and inserted between the contiguously associated portions of said inner cover and outer cover such that said first end of the conductive tab is held in electrical contact with the outer cover by the clamping coaction of the inner cover and the outer cover.

4,454,209

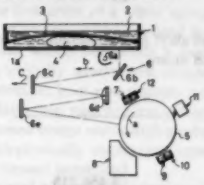
HIGH RESOLUTION SOFT X-RAY OR ION BEAM LITHOGRAPHIC MASK

Phillip D. Blais, Washington Township, Fayette County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 217,342, Dec. 17, 1980, abandoned. This application Jan. 19, 1983, Ser. No. 459,286

Int. Cl.³ G03F 9/00, 1/00

U.S. Cl. 430—5 2 Claims



1. A mask for use in lithographic processing, comprising in combination:

(a) a glass support frame transparent to visible light and non-transparent to short wave-length radiation;

(b) a beryllium foil non-transparent to visible light and transparent to said short wave-length radiation, said foil being affixed to said support frame such that said support frame extends beyond the perimeter of said foil with said foil and said portions of said support frame which extend beyond the perimeter of said foil joining to form a substantially flat surface; and

(c) a thin patterned layer affixed to said substantially flat surface rendering portions of said beryllium foil and said support frame overlaid by said patterned layer non-transparent to visible light and to radiation within said selected band with portions of said support frame in conjunction with portions of said patterned layer forming a key for aligning said mask permitting said mask to be aligned using visible light.

4,454,210

ELECTROPHOTOGRAPHIC REPRODUCTION OF A THREE-DIMENSIONAL OBJECT

Kenzo Ariyama, Yokohama; Hideo Yamazaki, Urayasu, and Tamotsu Motohashi, Tokyo; Minoru Hirota, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan

Company, Ltd., Japan

Filed Jan. 25, 1982, Ser. No. 342,471

Claims priority, application Japan, Jan. 24, 1981, 56-9173; Mar. 20, 1981, 56-40713; Mar. 20, 1981, 56-40715

Int. Cl.³ G03G 13/22

U.S. Cl. 430—31 5 Claims

1. An electrophotographic method for making a two-dimensional copy from a three-dimensional object, said method comprising the steps of:

immersing said object into a quantity of transparent liquid contained in a container having a transparent bottom plate;

bringing said object partly in contact with said bottom plate;

exposing said object through said transparent bottom plate to a photosensitive member, by means of an optical system having a field of focal depth coincident with said object on said bottom plate;

forming an electrostatic latent image of said object on said bottom plate on said photosensitive member; and

developing said latent image to produce a two-dimensional image of said object on said photosensitive member.

4,454,211

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER WITH PYRAZOLINE CHARGE TRANSPORT MATERIAL

Yoshio Takasu, Tama, and Shozo Ishikawa, Sayama, both of Japan, assignors to Canon Kabushiki Kaisha and Copyer Kabushiki Kaisha, both of Tokyo, Japan

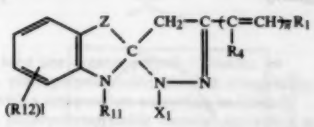
Filed Jun. 1, 1982, Ser. No. 383,629

Claims priority, application Japan, Jun. 10, 1981, 56-89256; Jun. 15, 1981, 56-91876; Jun. 23, 1981, 56-97764; Jun. 23, 1981, 56-97765; Jun. 23, 1981, 56-97766; Jun. 23, 1981, 56-97767; Jun. 23, 1981, 56-97768; Jul. 22, 1981, 56-114837; Jul. 22, 1981, 56-114838

Int. Cl.³ G03G 5/06, 5/14

U.S. Cl. 430—59 9 Claims

1. An electrophotographic photosensitive member comprising a charge generation layer and a charge transport layer which includes at least one pyrazoline compound represented by the following formula:



wherein X_1 is a substituted or unsubstituted heterocyclic residue selected from the group consisting of substituted or unsubstituted pyridyl, quinolyl, carbazolyl, furyl, imidazolyl, oxazolyl, and isoxazolyl;

R_1 is a substituted or unsubstituted aryl or heterocyclic residue;

R_4 is hydrogen, a halogen, or a substituted or unsubstituted alkyl or aryl;

R_{11} is a substituted or unsubstituted alkyl;

R_{12} is hydrogen, a halogen, or an organic monovalent residue;

Z is

or —CH=CH—, wherein R_{13} and R_{14} are each a substituted or unsubstituted alkyl;

n is 0 or 1; and

l is an integer of 1 to 4.

4,454,212

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Kiyoshi Sakai; Mitsuru Hashimoto; Masafumi Ohta, all of Numazu, and Masaomi Sasaki, Suntoh, all of Japan, assignors to Ricoh Company Limited, Tokyo, Japan

Continuation of Ser. No. 79,406, Sep. 27, 1979, Pat. No. 4,365,014. This application Sep. 15, 1982, Ser. No. 418,348

Claims priority, application Japan, Sep. 29, 1978, 53-119949

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ G03G 5/06, 5/14

U.S. Cl. 430—59 4 Claims

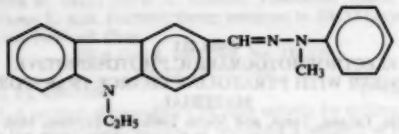
1. An electrophotographic element comprising:

an electroconductive support member;

a charge carrier producing layer;

a charge transport layer adjacent said charge carrier produc-

ing layer, the charge transport layer consisting of 9-ethyl-carbazole-3-carbaldehyde-1-methyl-phenylhydrazone having the formula



and a binder.

4,454,213

ORGANIC PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

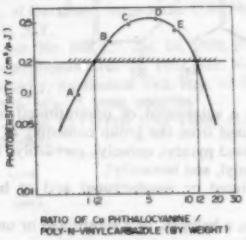
Teruo Yagishita, Yokohama; Seiji Okada, Sagamihara; Toshiaki Narusawa, and Hirofumi Okuyama, both of Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 7, 1982, Ser. No. 366,376

Claims priority, application Japan, Apr. 9, 1981, 56-53302; Sep. 11, 1981, 56-142384

Int. Cl.³ G03G 5/06

U.S. Cl. 430—76 10 Claims



1. A photosensitive material for electrophotography, which comprises a mixture of a phthalocyanine pigment, poly-N-vinyl-carbazole and an organic resin, wherein the weight ratio of said phthalocyanine pigment to said poly-N-vinyl-carbazole is in the range from 2 to 5, and the content of said phthalocyanine pigment is in the range from about 30 to 46% by weight, the content of said poly-N-vinyl-carbazole is in the range from 7 to 18% by weight and said organic resin is in the range from 45% to 60% by weight, based on the total amount of the photosensitive material.

4,454,214

TONER COMPOSITIONS CONTAINING PYRIDINIUM TETRAFLUOROBORATES

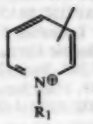
Robert J. Gruber, Pittsford; Paul C. Julien, Webster, and Raymond A. Yourd, III, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1982, Ser. No. 446,739

Int. Cl.³ G03G 9/08

U.S. Cl. 430—110 28 Claims

1. An improved positively charged toner composition for use in developing electrostatic images contained in electrostatographic imaging devices wherein fusing is accomplished with a fuser roll fabricated from lead oxide and a vinylidene fluoride hexafluoropropylene copolymer, which composition is comprised of resin particles, pigment particles, and as the charge enhancing additive present in an amount of from about 0.1 percent by weight to about 10 percent by weight, a pyridinium tetrafluoroborate of the following formula:



wherein R_1 is an alkyl group containing from 1 carbon atom to about 22 carbon atoms.

4,454,215

IMPROVED COMPOSITION FOR DEVELOPING LATENT ELECTROSTATIC IMAGES FOR GAP TRANSFER TO A CARRIER SHEET

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Filed May 27, 1981, Ser. No. 267,465

Int. Cl.³ G03G 9/12

U.S. Cl. 430—115 5 Claims

1. A composition for developing a latent electrostatic image on an insulating surface to form a developed image including in combination a dielectric carrier liquid; a quantity of charged toner particles dispersed therethrough; a quantity of spacing particles having a surface charge of the same polarity as the charge of the toner particles, having their smallest diameter greater than the height of said developed image and their greatest diameter less than seventy microns, and having a dielectric constant greater than the dielectric constant of said carrier liquid disseminated throughout the carrier liquid.

4,454,216

METHOD FOR MAKING IMPROVED LITHOGRAPHIC PRINTING PLATE

Shoichi Horii; Eiji Kanada, and Mamoru Nakatani, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,797

Claims priority, application Japan, Jun. 23, 1981, 56-97241; Mar. 12, 1982, 57-40006

Int. Cl.³ G03C 5/54; G03F 7/02

U.S. Cl. 430—204 10 Claims

1. A method of printing with lithographic printing plate made by the silver complex diffusion transfer process comprising diffusion tranferring a diffusible silver complex formed from undeveloped silver halide in an imagewise exposed silver halide emulsion layer and a silver halide complexing agent to a physical development nuclei layer and developing it there to form a transferred silver which is utilized as an ink-receptive area, and wherein the diffusion transfer development treatment is carried out in the presence of at least one thione compound having a non-enolizable thione group, an adjacent nitrogen atom with an attached substituent R and represented by N-R, and a group of atoms which may carry the substituent R, said group of atoms being necessary for forming a 5- or 6-membered ring having no aromatic condensed ring, said substituent R is selected from the group consisting of alkyl, alkoxyalkyl, aminoalky, hydroxyalkyl, carboxyalkyl, acyloxyalkyl, sulfoalkyl, haloalkyl, allyl, amino, alkylamino, dialkylamino, acylamide, hydroxyl, acyloxy, alkylthio, and alkoxy groups which have no carbon atom or have 1 to 3 carbon atoms and then applying ink to the printing plate.

4,454,217
OPAQUE IMAGE FORMATION IN TONED PHOTOPOLYMER LAYERS USING LEACHING SOLUTION

Victor F. Chu, 2502 Garth Rd., Wilmington, Del. 19810

Filed Oct. 8, 1982, Ser. No. 433,413
Int. Cl.[3] G03C *11/12, 5/00, 3/00*
U.S. Cl. 430—253 9 Claims

1. Process for the formation of a white opaque image in the toned image areas of an imagewise exposed layer of a photopolymer composition which comprises a leachable addition polymerizable ethylenically unsaturated compound, an initiator or initiator system, at least one organic polymeric binder and optionally a plasticizer, said process comprising

(1) treating the toned image areas with a solution capable of leaching the ethylenically unsaturated compound,

(2) washing the treated areas, and

(3) drying the treated and washed areas at a temperature up to 70° C.

4. A process according to claim 1 wherein prior to formation of the toned areas in the layer and treatment with the solution, the photopolymer layer is laminated to a receptor surface, the photopolymer is imagewise exposed through an image-bearing transparency and is peeled apart at an elevated temperature yielding tonable and leachable areas in both the peeled portion of the layer and the portion of the layer remaining on the receptor surface.

4,454,218
N-ALKYLINDOLYLIDENE AND N-ALKYLBENZO-THIAZOLYLIDENE ALKANONES AS SENSITIZERS FOR PHOTOPOLYMER COMPOSITIONS

Thomas E. Dueber, Wilmington, Del., and William J. Link, deceased, late of Wilmington, Del. (by Elizabeth T. Link, executrix), assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

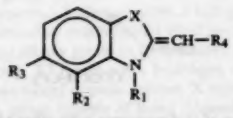
Filed Sep. 13, 1982, Ser. No. 417,682
Int. Cl.[3] G03C *1/68, 1/94, 1/76*
U.S. Cl. 430—277 17 Claims

1. A photopolymerizable composition consisting essentially of an admixture of

(a) at least one nongaseous ethylenically unsaturated compound having at least one terminal ethylenically unsaturated group, a boiling point above 100° C. at normal atmospheric pressure and being capable of addition polymerization,

(b) at least one photoinitiator taken from the group consisting of hexaarylbiimidazoles, 4-trichloromethyl-4-methyl-2,5-cyclohexadienones, quinones, alkylaryl ketones and benzophenones;

(c) a sensitizing amount of an N-alkylindolylidene or N-alkylbenzothiazolylidene alkanone spectral sensitizer of the formula:



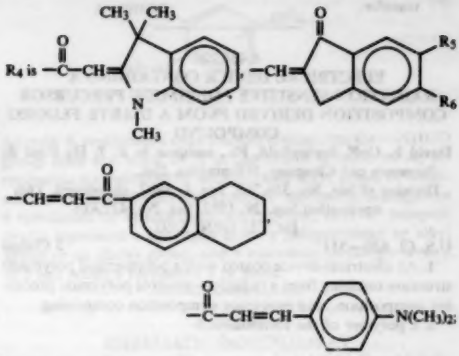
wherein

R_1 is CH_3—$(CH_2)_n$—, and n is 0 to 4;

R_2 is H;

R_3 is H, CH_3;

R_2 and R_3 when taken together form a benzene ring;



R_5 is H, CH_3O;

R_6 is H, CH_3O;

x is >S,

(d) at least one organic polymeric binder.

14. A photopolymerizable element comprising a support coated with a composition according to claim 1.

16. A photopolymerizable element according to claim 14 wherein the support is a metallic surface.

17. A photopolymerizable element according to claim 16 wherein the support is copper.

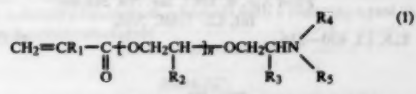
4,454,219
PHOTOSENSITIVE RESIN COMPOSITION COMPRISED OF A POLYMER OBTAINED FROM AN ALIPHATIC AMINO GROUP-CONTAINING MONOMER AS A COMONOMER

Takashi Yamadera, and Nobuyuki Hayashi, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,295
Claims priority, application Japan, Apr. 27, 1981, 56-64465; Nov. 28, 1981, 56-191260
Int. Cl.[3] G03C *1/70*
U.S. Cl. 430—281 22 Claims

1. A solvent developable photosensitive resin composition consisting essentially of

(a) a film forming property imparting polymer obtained by using as a comonomer in an amount of 0.1 to 10% by weight, a monomer containing an aliphatic amino group represented by the formula:



(1)

wherein R_1, R_2 and R_3 are independently hydrogen or a methyl group; R_4 and R_5 are independently an alkyl group having 1 to 4 carbon atoms, or R_4 and R_5 may form a saturated alicyclic 4- to 7-membered ring together with the nitrogen atom; and n is zero or an integer of 1 to 3,

(b) an ethylenic unsaturated compound other than the monomer represented by formula (1),

(c) a photosensitizer and/or a photosensitizer system capable of forming free radicals by actinic light, and

(d) an organic halogen compound capable of liberating

halogen radicals by exposure to actinic light or by chain transfer.

4,454,220

ELECTRICAL DEVICE CONTAINING A RADIATION-SENSITIVE POLYIMIDE PRECURSOR COMPOSITION DERIVED FROM A DIARYL FLUORO COMPOUND

David L. Goff, Springfield, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

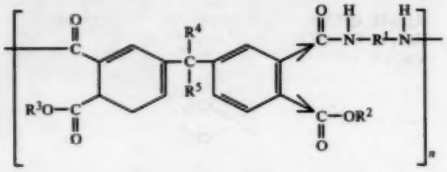
Division of Ser. No. 336,765, Jan. 4, 1982, abandoned. This application Sep. 29, 1982, Ser. No. 427,416

Int. Cl.[3] G03C 5/00

U.S. Cl. 430—311 3 Claims

1. An electrical device coated with a polymerized polyimide structure resulting from a radiation-sensitive polyimide precursor composition, said precursor composition comprising:

a. a polymer of the formula



wherein n is a positive integer corresponding to the number of units in the polymer and is sufficiently large to provide the polymer with a number average molecular weight of about 1500–15,000 as determined by vapor pressure osmometry, and wherein for any particular unit in the polymer: → denotes isomerism; R^1 is a divalent aromatic, aliphatic or cycloaliphatic radical containing at least 2 carbon atoms; R^2 and R^3 are selected from the group consisting of a hydrogen radical and any organic radical containing a photopolymerizable olefinic double bond, at least one of R^2 and R^3 being said organic radical; and R^4 and R^5 are selected from the group consisting of perfluoro and perhalofluoro aliphatic hydrocarbons having 1 to 8 carbons;

b. a radiation sensitive polymerizable polyfunctional acrylate compound; and

c. a photopolymerization initiator system comprising hydrogen donor initiator and aromatic biimidazole.

4,454,221

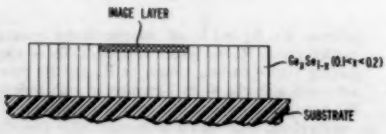
ANISOTROPIC WET ETCHING OF CHALCOGENIDE GLASS RESISTS

Cheng-Hsuan Chen; Edith C. Ong, both of New Providence; James C. Phillips, Summit, and King L. Tai, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 8, 1982, Ser. No. 366,646

Int. Cl.[3] G03C 5/00

U.S. Cl. 430—316 29 Claims



1. A method for fabricating an article which includes a surface, comprising the steps of:

exposing selected portions of a resist, on said surface, to energy; and

treating said resist with a wet developing agent to remove nonexposed portions of said resist, characterized in that

the nonexposed portions of said resist removed by said wet developing agent include regions having a first chemical composition and regions having a second chemical composition, the regions having said first chemical composition being interspersed among the regions having said second chemical composition, and a lateral dimension of the regions having said second chemical composition being less than the thickness of the resist, and

said wet developing agent includes first and second chemical components, said first chemical component preferentially etching the regions having said first chemical composition, and the etching rate of said first chemical component being greater than the etching rate of said second chemical component.

2. The method of claim 1 wherein said resist includes a chalcogenide glass.

3. The method of claim 2 wherein said chalcogenide glass is a germanium-selenium glass having a nominal composition Ge_xSe_{1-x} where $0.1<x<0.2$, and wherein the regions having said first chemical composition include $GeSe_2$ and the regions having said second chemical composition include Se.

4,454,222

PROCESS FOR FORMING RESIST PATTERNS USING MIXED KETONE DEVELOPERS

Tsukasa Tada, Yokohama, and Akira Miura, Toride, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

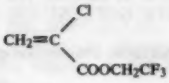
Filed Apr. 13, 1982, Ser. No. 367,921

Claims priority, application Japan, Apr. 21, 1981, 56-59217; Apr. 21, 1981, 56-59218; Oct. 6, 1981, 56-158205

Int. Cl.[3] G03C 5/24, 1/495

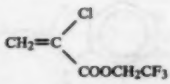
U.S. Cl. 430—326 19 Claims

1. In a process for forming resist patterns by coating on a substrate at least one selected from homopolymers of a monomer represented by the formula:



and copolymers of said monomer with other vinyl monomers, applying radiation to a desired portion thereof, and thereafter carrying out development treatment with use of a developer not containing alcohol; the improvement wherein said alcohol-less developer is composed of one or more of ketones selected from the group consisting of 2-butanone, 2-methyl-3-butanone, 2-pentanone, 3-pentanone and 4-methyl-2-pentanone; or a mixture thereof with another ketone, except for a single use of 2-butanone.

19. In a process for forming resist patterns by coating on a substrate at least one selected from homopolymers of monomer represented by the formula:



and copolymers of said monomer with other vinyl monomers, applying radiation to a desired portion thereof, and thereafter carrying out development treatment with use of a developer, the improvement wherein said developer is composed of a 2-butanone/2-methyl-3-butanone/2-propanol mixture containing 2-propanol in an amount of from 1 to 4% by weight.

4,454,223

ORGANIC OXIDANTS AND RADICAL TRAPS FOR NEGATIVE-WORKING SILVER HALIDE EMULSIONS

James J. Welter, Asheville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1982, Ser. No. 408,493
Int. Cl.³ G03C 1/34
U.S. Cl. 430—533 5 Claims

1. A negative-working silver halide emulsion having low fog and improved aging stability, characterized in that said emulsion includes an organic compound selected from the group consisting of:
(1) 2,2-diphenyl-1-picrylhydrazyl
(2) p-nitro-o-chlorobenzylthiosulfate

4,454,224

PHOTOGRAPHIC BLEACHING COMPOSITIONS

Gerald J. Brien, and Jeffrey L. Hall, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,259
Int. Cl.³ G03C 7/00, 5/44, 5/42
U.S. Cl. 430—393 18 Claims

1. A photographic bleaching composition consisting essentially of an aqueous solution having a pH of at least 7 which contains a peroxy compound, a buffering agent, and a polyacetic acid which contains at least three carboxyl groups and is selected from the group consisting of aminopolyacetic acids and thiopolyacetic acids.

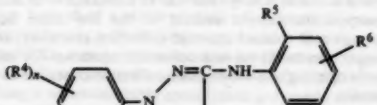
4,454,225

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Sakai; Yoshio Seoka, and Kozo Aoki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

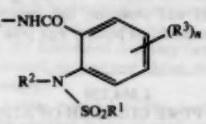
Filed Jun. 1, 1982, Ser. No. 384,119
Claims priority, application Japan, Jun. 1, 1981, 56-84163
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ G03C 1/46
U.S. Cl. 430—505 19 Claims

1. A color photographic light-sensitive material comprising: a support; and positioned on the support a green-sensitive silver halide emulsion layer containing a magenta dye forming coupler represented by the following general formula (I)



(I)

wherein R^4 represents a halogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted alkoxy group; R^5 represents a hydrogen atom, a halogen atom, a nitro group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group or a substituted or unsubstituted acylamino group; R^6 represents a hydrogen atom, a halogen atom or a mono-valent organic residue; X represents a hydrogen atom or a group capable of being released upon coupling and exhibiting a two-equivalent property; and n represents an integer from 1 to 5 and when n represents 2 or more, R^4 may be the same or different, and a red-sensitive silver halide emulsion layer containing a cyan dye forming coupler represented by the following general formula (II)



(II)

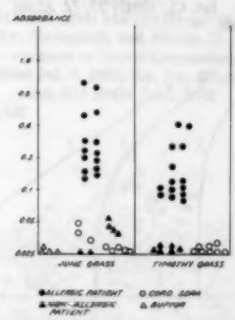
wherein A represents a cyan coupler residue, but the —NHCO group does not bond to A in the active position of A; R^1 represents a substituted or unsubstituted alkyl group or a substituted or unsubstituted aryl group, R^2 represents hydrogen or a substituted or unsubstituted alkyl group; each R^3 independently represents a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; and n represents an integer from 1 to 3 and when n represents 2 or more.

4,454,226

ENZYMATIC IMMUNOASSAY

Majid Ali, 19 Edgemont Pl., Teaneck, N.J. 07666; Donald Nalebuff, 89 Lakeshore Dr., Oakland, N.J. 07436; Alfred Fayemi, 15 Francine Ct., White Plains, N.Y. 10607; Madhava P. Ramanarayanan, 271 Briarcliffe Rd., Teaneck, N.J. 07666, and Ricardo Mesa-Tejada, 42 Juniper Pl., Briarcliff Manor, N.Y. 10510

Filed Mar. 17, 1982, Ser. No. 358,888
The portion of the term of this patent subsequent to Mar. 19, 1998, has been disclaimed.
Int. Cl.³ G01N 33/54; C12N 9/96, 11/02; C12Q 1/28
U.S. Cl. 435—7 11 Claims



1. A stable conjugate of peroxidase with a substance selected from the group consisting of allergen, non-immunoglobulin protein and primary amino group containing drug, said conjugate having an average of 2–3 molecules of peroxidase per molecule of substance with an average molecular weight of about 30,000 daltons, prepared by reacting peroxidase which has previously been treated with phenylisothiocyanate to block its free amino groups and oxidized to form aldehyde groups from its carbohydrate moiety with said substance to form a Schiff's base which is titrated with a reducing agent to form the stable conjugate.

4,454,227

METHOD FOR CULTIVATING INSECT CELLS

Anton Röder, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 18, 1981, Ser. No. 332,196
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048289
Int. Cl.³ C12N 5/00, 1/38, 5/02; C12R 1/91
U.S. Cl. 435—240 6 Claims

1. In a method which comprises cultivating and reproducing

insect cells in a nutrient medium containing inorganic salts, amino acids, sugars and vitamins, the improvement which comprises adding unmodified poultry egg yolk to the nutrient medium.

4,454,228

BIOLOGICALLY PURE CULTURE OF *STREPTOMYCES MICROSPINUS* NRRL 12524 CAPABLE OF PRODUCING ANTIBIOTIC U-64,815

Howard A. Whaley; William C. Snyder; John C. Greenfield, all of Portage, and John H. Coats, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 304,393, Sep. 21, 1981, Pat. No. 4,427,776. This application Sep. 29, 1982, Ser. No. 426,482

Int. Cl.³ C12N *1/20*; C12R *1/465*; C12P *1/06*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of the microorganism *Streptomyces microspinus*, NRRL 12524, said culture being capable of producing the antibiotic U-64,815 in a recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances.

4,454,229

DETERMINATION OF THE ACID-BASE STATUS OF BLOOD

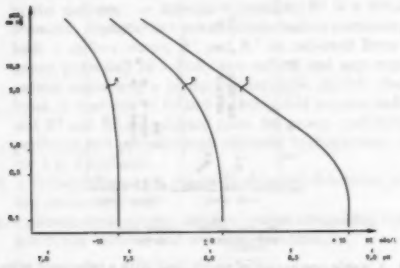
Rolf Zander, R.-Schneider-Strasse 1, 6500 Mainz, and Hans U. Wolf, Liszt-Strasse 10, 7910 Neu-Ulm, both of Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,665

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1981, 3113797

Int. Cl.³ G01N *33/72*, *33/84*

U.S. Cl. 436—68 **5 Claims**



1. In a method for the determination of the acid-base status of blood wherein two of the three values actual blood pH, pCO_2 and base excess BE along with hemoglobin content are required, the improvement wherein the determination of the base excess BE is made through measurement of the pH value of the blood at a pCO_2-value of about 0 mm Hg.

4,454,230

ASSAY METHOD AND REAGENT COMPOSITION FOR THE DETERMINATION OF MAGNESIUM

Jerry W. Denney, Indianapolis, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed Jul. 12, 1982, Ser. No. 397,002

Int. Cl.³ G01N *33/20*, *33/52*

U.S. Cl. 436—74 **7 Claims**

3. A method for the determination of magnesium in a protein-containing fluid, comprising the steps of:

(a) combining a sample of said fluid with a reagent to form a reaction mixture, said reagent comprising:

(i) an alkaline buffer,

(ii) calmagite,

(iii) an agent to complex heavy metals, and

(iv) at least about 0.1% by weight caffeine; and

(b) measuring the absorbance of said reaction mixture.

4,454,231

METHOD AND DEVICE FOR MASS TRANSFER OPERATION IN IMMUNOASSAYS AND OTHER APPLICATIONS

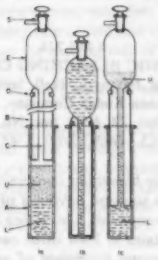
Michael Cais, and Moshe Shimoni, both of Haifa, Israel, assignors to Technion Research and Development Foundation, Ltd., Haifa, Israel

Filed Dec. 4, 1980, Ser. No. 212,806

Claims priority, application Israel, Dec. 12, 1979, 58943

Int. Cl.³ G01N *33/58*, *35/00*; B65D *71/00*

U.S. Cl. 436—500 **32 Claims**



1. A device for carrying out the mass transfer operation of one or more components from a first liquid to a second liquid substantially immiscible with the first liquid and the physical separation of said two liquids, comprising:

a mixing reservoir (A);

a mixer-separator means (B), snugly fitted into said mixing reservoir for sliding movement therein and having at least one unobstructed channel (C) traversing the vertical axis thereof and opening into said mixing reservoir, and a collection container (E) at the end of said mixer-separator means opposite said unobstructed opening, for thoroughly mixing the two liquids in response to at least one movement of said mixer-separator means into and out of said mixing reservoir by an amount sufficient to cause a substantial portion of both liquids to be transported through said channel into said collection container and back into said mixing reservoir and for subsequently separating the first liquid from the second liquid in response to controlled movement of said mixer-separator means into said mixing reservoir to a distance sufficient to transport the desired amount of the less dense liquid through said channel into said collection container; and

a stopper means (S) on said collection container for selectively opening and closing said collection container to the outside.

4,454,232

ESTRIOL ASSAY

Susan E. Breglio, Pinole, and Mark S. Hanamoto, Mill Valley, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Jun. 7, 1982, Ser. No. 385,598

Int. Cl.³ G01N *33/54*, *33/58*, *33/60*

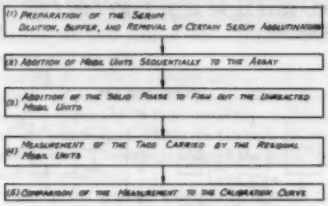
U.S. Cl. 436—504 **18 Claims**

1. In an immunoassay for determining the presence of estriol in samples of human sera, said assay depending on binding between the estriol and a specific binding protein in an assay medium, an improvement comprising adding to the assay medium predetermined amounts of both a polyoxyethylene ether and a surface active agent selected from the group consisting of polyoxyethylenesorbitans, deoxycholate salts, and ANS, said predetermined amounts selected to inhibit protein interference with the specific binding between the estriol and specific binding protein.

4,454,233
METHOD OF TAGGED IMMUNOASSAY

Chia-Gee Wang, Millwood, N.Y., assignor to Wang Associates, Millwood, N.Y.

Continuation-in-part of Ser. No. 313,711, Oct. 21, 1981. This application Dec. 17, 1981, Ser. No. 331,859
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.³ G01N 33/54
U.S. Cl. 436—525 52 Claims


(1) PREPARATION OF THE SERUM DILUTION, BUFFER, AND REMOVAL OF CERTAIN SERUM AGGLUTINATORS
(2) ADDITION OF MOBIL UNITS SEQUENTIALLY TO THE ASSAY
(3) ADDITION OF THE SOLID PHASE TO FISH OUT THE UNREACTED MOBIL UNITS
(4) MEASUREMENT OF THE TAGS CARRIED BY THE RESIDUAL MOBIL UNITS
(5) COMPARISON OF THE MEASUREMENT TO THE CALIBRATION CURVE

1. An immunoassay method for measurement of the content of a target antigen or antibody in a fluid or tissue specimen, which comprises reacting the target with reagent antibody or antigen which forms a complex with the target and is carried by small tagged mobile units having tagging elements or components which are unassociated chemically with said reagent and are protected against reaction with the target and the biological and chemical environment of the assay, and measuring the tagged mobile units bearing formed complexes by spectroscopic detection.

4,454,234
COATED MAGNETIZABLE MICROPARTICLES, REVERSIBLE SUSPENSIONS THEREOF, AND PROCESSES RELATING THERETO

George H. Czerlinski, 9111 Forest View Rd., Evanston, Ill. 60203

Filed Dec. 30, 1981, Ser. No. 335,736
Int. Cl.³ B32B 5/16
U.S. Cl. 436—526 18 Claims

1. Magnetically-responsive discrete microparticles suitable for use in preparing selectively reversible suspensions thereof; each such microparticle having a core, a coating thereabout, and a diameter no greater than about one micron; said core being formed of a single particle of magnetically-responsive material having a Curie temperature within the range of about 5 to 65° C., a magnetic moment at saturation of at least 2.0 μ_B at 4.2° K, and a specific gravity above 3.0; said coating comprising a water-insoluble cross-linked polymeric material having reactive groups at the surface thereof.

4,454,235
CAPILLARY TUBE HOLDER FOR LIQUID TRANSFER IN IMMUNOASSAY

Leighton C. Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 1, 1982, Ser. No. 383,826
Int. Cl.³ G01N 33/54, 33/52
U.S. Cl. 436—536 10 Claims

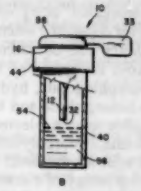
1. In a method for determining a ligand in a liquid medium, formed by combining blood serum/plasma with a fluorogenic reagent, the steps comprising:

thoroughly mixing the blood serum/plasma with the fluorogenic reagent,

transferring a sample of the resulting reaction product to a second reagent through an accurately calibrated bore of a capillary tube suspended by a capillary tube carrier between its ends by means of a standard projecting from the undersurface of the carrier,

positioning the suspended capillary tube within a container for the second reagent and above the liquid level of the second reagent,

sealing an access opening of the container of the second reagent by pressing the undersurface of the capillary tube carrier about the periphery of the access opening;

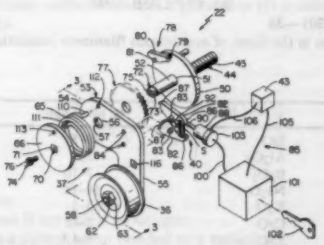


and thereafter uniformly dispersing the contents of the capillary tube throughout the second reagent and within a relatively short time period, by agitating the liquid-second-reagent container and capillary-holder while maintaining the ends of the capillary tube open and accessible to the liquid second reagent during mixing.

4,454,236
BELT TENSIONER AND METHOD OF MAKING SAME

Randy C. Foster, Springfield, and Melvin D. Gayer, Everton, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Jul. 7, 1981, Ser. No. 281,154
Int. Cl.³ F16H 7/12, 7/08
U.S. Cl. 474—135 20 Claims



1. In a tensioner for a power transmission belt which is adapted to be operated in an endless path by a driving means, said tensioner comprising, a rotatable idler pulley, a supporting assembly for rotatably supporting said pulley and urging said pulley against said belt with a particular belt tensioning force with said assembly supported adjacent said belt, and a system for holding said assembly with said pulley urged against said belt, the improvement wherein said holding system comprises actuator means for operating said driving means so as to cause said belt to be moving in said endless path, said actuator means having means that causes said system to first automatically lock said assembly at a fixed position immediately prior to said actuator means causing said belt to be moved in said endless path and while said supporting assembly is applying said particular belt tensioning force to thereby determine a fixed center about which said pulley is rotated, said holding system being adapted to provide release of said assembly from said fixed position and hence said pulley from said fixed center only when said actuator means causes said belt to be stationary.

4,454,237

ORGANIC-INORGANIC COMPOSITES CONTAINING SYNTHETIC MICA

Syed N. Hoda, Horseheads, and Anthony R. Olszewski, Bath, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 27, 1983, Ser. No. 461,571
Int. Cl.³ C03C *3/22*; C09C *1/02*
U.S. Cl. 501—2 **8 Claims**

1. An organic-inorganic composite mass demonstrating hydrophobic behavior consisting essentially of organic polycation-exchanged lithium and/or sodium water-swelling mica crystals selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite, at least a substantial proportion of said crystals exhibiting a morphology of a continuum of flakes, rectangular-like strips, and interwoven ribbons in parallel or sub-parallel zones or sheaths, wherein said strips and ribbons are about 0.5–10 microns in length, about 500 Å–5000 Å in width, and less than 100 Å in thickness, and said flakes are irregularly shaped with diameters between about 0.5–10 microns and cross sections of less than about 100 Å, and said organic polycation being selected from the group of aminosilanes and organic chrome complexes which are chemically reactive werner complexes.

4,454,238

MANUFACTURE OF CONTINUOUS GLASS FILAMENTS AND COMPOSITIONS THEREFOR

Barry C. Hobson, and John Woodthorpe, both of Rochdale, England, assignors to T & N Research Materials Ltd., Manchester, England

Filed Dec. 6, 1982, Ser. No. 446,870
Claims priority, application United Kingdom, Dec. 10, 1981, 8137306
Int. Cl.³ C03B *3/00*
U.S. Cl. 501—38 **4 Claims**

4. Glass in the form of continuous filaments consisting essentially of

	% by weight
SiO	49–55
Al_2O_3	2–4
B_2O_3	7–10
Na_2O	14–18
K_2O	0.5–3
CaO	8–12
ZnO	1–4.5
ZrO_2	1–7.5
TiO_2	0–7

and having a 1000 poise viscosity temperature not greater than 1050° C. and a liquidus temperature at least 20° C. below the 1000-poise viscosity temperature.

4,454,239

CARBONACEOUS REFRACTORY COMPOSITION FOR PRESSING BRICK SHAPES

Nicholas Cassens, Jr., Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation of Ser. No. 367,713, Apr. 12, 1982, abandoned. This application May 25, 1983, Ser. No. 497,994
Int. Cl.³ C04B *35/54*
U.S. Cl. 501—99 **12 Claims**

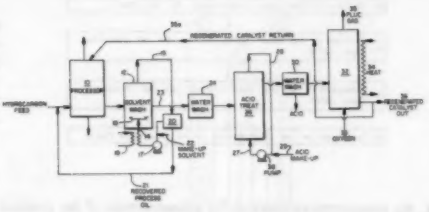
1. A carbonaceous pressed refractory brick consisting essentially of (1) from 60 to 90% refractory oxide aggregate, substantially all of which is coarser than 0.15 mm, and (2) a carbonaceous matrix of from 9.6% to 28.1% graphite, substantially all finer than 0.4 mm, 2% to 8% resin, and from 0% to 6% other carbon material, said matrix being substantially free of oxide refractory material, all percentages being by weight and based on the total weight of the composition.

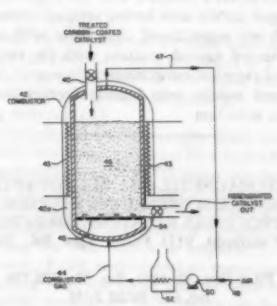
4,454,240

CATALYST REGENERATION PROCESS INCLUDING METAL CONTAMINANTS REMOVAL

Partha S. Ganguli, Lawrenceville, N.J., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Nov. 2, 1981, Ser. No. 317,216
Int. Cl.³ B01J *23/94*, *23/92*; C10G *1/06*; C01G *31/00*
U.S. Cl. 502—26 **6 Claims**





1. A process for removing metal contaminants of iron, titanium, calcium, sodium, vanadium and nickel from particulate hydrogenation catalysts used in coal liquefaction and petroleum residua conversion processes, comprising:

(a) washing the used catalyst with a hydrocarbon solvent to remove process oils;

(b) treating the oil-free catalyst with an aqueous solution consisting of sulphuric acid and an ammonium ion which converts the metal contaminants to their respective sulfate compounds and at a temperature within the range of 60°–250° F. for at least about 5 minutes to remove the metal contaminants from the catalysts;

(c) washiing the treated catalyst to remove the aqueous solution; and

(d) processing the washed, treated catalyst further by carbon burnoff at a temperature of 800°–900° F. using 1–6 V % oxygen in an inert gas mixture to remove carbon deposits, thereby providing a regenerated catalyst.

4. A process for removing metal contaminants of iron, titanium, calcium, sodium, vanadium and nickel from particulate hydrogenation catalysts used in coal liquefaction and petroleum residua conversion processes, comprising:

(a) washing the used catalyst with a hydrocarbon solvent to remove process oils;

(b) washing the oil-free catalyst with water to substantially fill the catalyst pores with water;

(c) treating the catalyst having pores substantially water filled with an aqueous acid solution which removes the metal contaminants and at a temperature within the range

of 60°–250° F. for at least about 5 minutes to remove metal contaminants from the catalyst;

(d) washing the treated catalyst with a polar solvent to remove the aqueous solution; and

(e) processing the washed, treated catalyst further by carbon burnoff at a temperature of 800°–900° F. using 1–6 V % oxygen in an inert gas mixture to remove carbon deposits, thereby providing a regenerated catalyst.

6. A process for removing metal contaminants of iron, titanium, calcium, sodium, vanadium and nickel from particulate hydrogenation catalysts used in coal liquefaction and petroleum residua conversion processes, comprising:

(a) washing the used catalyst with a hydrocarbon solvent to remove process oils;

(b) treating the oil-free catalyst with a 5–20 W % aqueous solution of ammonium peroxydisulfate which converts metal contaminants to their respective sulfate compounds and at a temperature within the range of 60° to 150° F. for at least about 5 minutes to remove the metal contaminants from the catalyst;

(c) washing the treated catalyst to remove the aqueous solution; and

(d) processing the washed catalyst further by carbon burnoff at a temperature of 800°–900° F. using 1–6 V % oxygen in an inert gas mixture to remove carbon deposits, thereby providing a regenerated catalyst.

4,454,241
PHOSPHORUS-CONTAINING CATALYST

Lloyd A. Pine, Baton Rouge, and Neville L. Cull, Baker, both of La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 24, 1982, Ser. No. 381,388
Int. Cl.³ B01J *29/08, 21/16*
U.S. Cl. 502—68 **28 Claims**

1. A catalyst comprising a crystalline aluminosilicate zeolite prepared from a clay starting material, a residue derived from said clay, and an effective amount of phosphorus, said catalyst having been prepared by the steps which comprise:

(a) ion exchanging a clay derived alkali metal-containing Y-type crystalline aluminosilicate zeolite and the clay derived residue with a cation other than an alkali metal to decrease the alkali metal content of said alkali metal-containing zeolite;

(b) calcining the resulting ion exchanged zeolite and clay derived residue, and

(c) contacting the resulting calcined zeolite and clay derived residue with a medium comprising an anion selected from the group consisting of a dihydrogen phosphate anion, a dihydrogen phosphite anion and mixtures thereof for a time sufficient to composite said effective amount of phosphorus with said calcined zeolite and residue.

2. The catalyst of claim 1 wherein said catalyst additionally comprises clay.

13. In the process of preparing a Y-type crystalline aluminosilicate zeolite from a clay starting material and an additional source of silica and wherein an alkali metal-containing crystalline aluminosilicate zeolite derived from clay and a clay derived residue are ion exchanged with a cation other than an alkali metal to decrease the alkali metal content of said zeolite and the ion exchanged zeolite and clay derived residue are calcined, the improvement which comprises contacting the calcined ion exchanged zeolite and residue with a medium comprising an anion selected from the group consisting of dihydrogen phosphite anion, dihydrogen phosphate anion and mixtures thereof, to composite at least a portion of phosphorus with said zeolite and residue.

4,454,242
CATALYST FOR POLYMERIZATION OF OLEFINS

Tadashi Ikegami, and Katsuhiko Takaya, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1982, Ser. No. 381,118
Claims priority, application Japan, Jun. 1, 1981, 56-82455
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—113 **26 Claims**

1. A catalyst for polymerizing olefins comprising:

(A) a solid catalyst component obtained by separately supporting on an inorganic oxide carrier (a) a zirconium compound represented by the general formula:

$$Zr(OR^0)_nA_{4-n}$$

wherein R^0 is a hydrocarbon having 1 to 20 carbon atoms; A is a halogen atom, a carboalkoxy group, a carboxyl group, an acylalkenate, or a hydrocarbon group having 1 through 20 carbon atoms; and n is a number of 0 through 4; and (b) a chromium compound,

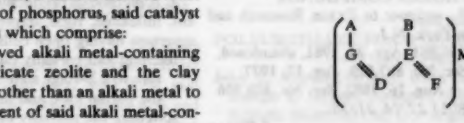
(B) an organometallic compound component.

4,454,243
CATALYST SYSTEM FOR PRODUCTION OF ORGANOLITHIUM COMPOUNDS AND LITHIUM HYDRIDE

Borislav Bogdanovic, Mulheim, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Division of Ser. No. 127,011, Mar. 4, 1980, Pat. No. 4,354,982.
This application Feb. 2, 1982, Ser. No. 344,907
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908928
Int. Cl.³ B01J *31/12*
U.S. Cl. 502—167 **35 Claims**

1. A catalyst comprising (1) a complex of an alkali metal and, a polycyclic aromatic selected from the group consisting of anthracene, naphthalene and diphenyl or (2) a complex of the formula



wherein

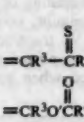
A and B are sulfur or oxygen;

G is a carbon atom bonded to a radical R^1;

D is a carbon atom bonded to a radical R^2 and there is a double bond between the carbon atom of G and D;

E is carbon;

F is oxygen, sulfur,



Me is an alkali metal;

n is an integer from 2 to 20;

L and L' are mono or poly-functional ethers or amines;

p and q are integers from 0 to 4;

R^1, R^2, R^3 and R^4 are independently hydrogen, alkyl, cycloalkyl, aralkyl or aryl groups;

with a metal halide, wherein the metal of said metal halide is a transition metal selected from the group consisting of I_b, II_b, IV_b, V_b, VI_b, VII_b and VIII of the periodic system.

4,454,244
NEW COMPOSITIONS

Gerald M. Woltermann, Dublin, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 28, 1983, Ser. No. 479,418
Int. Cl.³ B01J 27/14, 21/02, 27/02, 23/10
U.S. Cl. 502—208 18 Claims

1. The composition conforming to the formula $A_x^{++}B_y^{++}{}^{++}(OH)_{2x+3y-nz}D_z^{n-}tH_2O$ wherein A is a divalent metal, B is a trivalent metal, D is at least one polyanion selected from the group consisting of $Ta_6O_{18}OH^{-7}$, $NbO_{18}OH^{-7}$, $V_{10}O_{28}^{-6}$, $PMo_6V_6O_{40}^{-3}$, $PMo_6W_6O_{40}^{-3}$, $P_3O_{10}^{-5}$, $PMo_{12}O_{40}^{-3}$, $Mo_7O_{24}^{-6}$, $NiW_6O_{24}H_6^{-4}$, $As_2Mo_{18}O_{62}^{-6}$, $TeMo_6O_{24}^{-6}$, $PMo_{10}V_2O_{40}^{-5}$, $CoW_{12}O_{40}^{-6}$, $Pt_{18}(CO)_{36}^{-2}$, $Rh_6(CO)_{15}^{-2}$, $Re_3Cl_{12}^{-3}$, $Ni_3Cr(CO)_{16}^{-2}$, $H_3Ru_4CO)_{12}^{-}$, $HRe_3(CO)_{12}^{-2}$, and $HFe_4(CO)_{13}^{-3}$, x, y, z and t are numbers greater than zero, and n is a whole number preferably from 1 to 10 and the ratio of x:y is equal to or greater than 0.5 and less than or equal to 10.

4,454,245
CATALYST AND PROCESS FOR PRODUCING CONJUGATED DIENES

Paul R. Robinson, Costa Mesa, and Eric L. Moorehead, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 7, 1981, Ser. No. 328,446
Int. Cl.³ B01J 27/14
U.S. Cl. 502—209 33 Claims

1. An oxidative dehydrogenation catalyst defined by the formula:

$$Me_aV_bP_cSn_dO_eX$$

wherein X is hydrogen mordenite, Me is an alkali metal, a is 0.10 to 2, b is 0.10 to 1, c is 1, d is 0.001 to 0.30 and e is a number which satisfies the valence requirements of the other elements present.

4,454,246
HIGHLY DISPERSED SUPPORTED GROUP VIII NOBLE METAL PHOSPHORUS COMPOUNDS

Shun C. Fung, Edison, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 256,981, Apr. 24, 1981, abandoned, which is a division of Ser. No. 807,519, Jun. 17, 1977, abandoned. This application Aug. 16, 1982, Ser. No. 408,256
Int. Cl.³ B01J 27/14, 21/18
U.S. Cl. 502—213 5 Claims

1. A composition consisting of highly dispersed crystallites of Group VIII noble metal phosphides supported on a high surface area solid support, wherein said noble metal phosphide crystallites have a crystallite size of about 300 angstroms or less and wherein the loading of the Group VIII noble metal ranges from about 0.1 to about 30 wt.% based on the combined weight of the crystallite and support, wherein said support is selected from the group consisting of carbon, alumina, silica, silica-alumina, zeolite, kieselguhr, vermiculite, the refractory oxides of Group IVb and Vb transition metals, and mixtures thereof and wherein said supported noble metal phosphide, crystallites are decomposed when contacted with water at room temperature.

4,454,247
ION EXCHANGE MEMBRANES

Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 330,332, Dec. 14, 1981, Pat. No. 4,414,159, which is a division of Ser. No. 191,301, Sep. 26, 1980, Pat. No. 4,334,082. This application Sep. 1, 1982, Ser. No. 413,788
Int. Cl.³ C08D 5/20
U.S. Cl. 521—27 1 Claim

1. An ion exchange membrane-containing chlor-alkali electrolysis cell characterized by having an ion-exchange membrane formed from a copolymer of

(i) a vinyl ether monomer of the formula:

$$Y_2CFO(CFCF_2O)_nCF{=}CF_2$$
$$\quad\quad\quad

approximately one-half its original thickness to cause the walls forming the cells to rupture to produce an open-celled foam;

reexpanding the opened-celled foam by heating until the structure is expanded.

26. A rigid foam according to claim 25 in which:

the open-celled foam by is finally cured by heating to a temperature in the range of 150 degress F. to 250 degrees F. and maintaining the temperature for the necessary length of time to achieve a final cure.

4,454,249

REINFORCED PLASTICS WITH POROUS RESIN FRAGMENTS

Hirosuke Suzuki, Tokorozawa; Chiaki Mizukami, and Yoshiaki Sato, both of Iruma, all of Japan, assignors to Junkosha Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,324

Claims priority, application Japan, Aug. 28, 1981, 56/134933

Int. Cl.³ C08L 27/20, 27/18, 27/12

U.S. Cl. 521—54 7 Claims

1. Reinforced plastic compositions which comprise a fluoroplastic resin matrix selected from the group consisting of polytetrafluoroethylene, tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer, tetrafluoroethylene-hexfluoropropylene copolymer, tetrafluoroethylene-ethylene copolymer, polytrifluorochloroethylene and polyvinylidene fluoride, and stretched polytetrafluoroethylene resin fragments mixed thereinto.

4,454,250

LOW DENSITY CELLULAR POLYVINYL CHLORIDE

David M. Florence, Lancaster, and Wayne E. Smith, Washington Borough, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 336,778, Jan. 4, 1982, abandoned. This application Jun. 27, 1983, Ser. No. 508,184

Int. Cl.³ C08J 9/06

U.S. Cl. 521—75 18 Claims

1. A resin blend adapted to be expanded to provide cellular products having a closed cell content of at least 90%, said blend comprising a blowing agent and between about 40% and about 80% by weight of a vinyl chloride resin; between about 10% and about 40% by weight of a butadiene rubber; and, a polyfunctional or monofunctional monomer, the percentages by weight being based on the total weight of resin, rubber and monomer.

4,454,251

POLYUREA FOAMS PREPARED FROM ISOCYANATE, WATER, AND A LOWER-ALKANOL

Kurt C. Frisch, Grosse Ile, Mich., and Heinz Baumann, Kleiniedesheim, Fed. Rep. of Germany, assignors to Schaum-Chemie Wilhelm Bauer GmbH & Co. KG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 374,039, May 3, 1982, abandoned. This application Apr. 22, 1983, Ser. No. 487,869

Int. Cl.³ C08G 18/14

U.S. Cl. 521—107 15 Claims

1. A polyurea foam prepared by reacting a polyphenyl polymethylene polyisocyanate with water in the presence of a catalyst and having incorporated therein a small but density-lowering amount or compressive-strength-increasing amount of a lower-alkanol.

4,454,252

PROCESS OF SEALING AND STRENGTHENING WATER-BEARING GEOLOGICAL FORMATIONS BY MEANS OF POLYURETHANE-RESIN-FORMING COMPOSITIONS

Frank Meyer, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 239,771, Mar. 2, 1981, abandoned, which is a continuation of Ser. No. 80,782, Oct. 1, 1979, abandoned, which is a continuation of Ser. No. 898,896, Apr. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 737,563, Nov. 1, 1976, abandoned, which is a division of Ser. No. 622,018, Oct. 14, 1975, abandoned. This application Mar. 22, 1982, Ser. No. 360,890

Int. Cl.³ C08G 18/08, 18/24; C09K 17/00; E02D 3/12

U.S. Cl. 521—110 8 Claims

1. A method of sealing and consolidating water-bearing geological formations which comprises

intimately mixing

a polyisocyanate selected from the group consisting of toluene diisocyanates, hexamethylene diisocyanates, diphenylmethane diisocyanates and mixtures of diphenylmethane diisocyanates containing polyisocyanates of polyphenylpolymethanes,

in about equal amounts by volume a polyol having a molecular weight between 400 and 600 and a hydroxyl number between 340 and 400,

an accelerator in the amount of between 0.1 and 4% of the total weight of the polyisocyanate and polyol components,

a foam stabilizer in an amount between 0.5 and 5% of the total weight of the polyisocyanate and the polyol components;

introducing said freshly prepared water-insensitive mixture into said formation which is required to be sealed against water and to be consolidated; and

allowing said mixture to react with water to form a foam of urea derivatives and, since all of the water becomes bound, a non-foamed polyurethane resin which adheres to surfaces of said formation, so as to strengthen said formation.

4,454,253

POLYURETHANE FOAM GAME BALL, COMPOSITION AND PROCESS

John R. Murphy, Wayne; John S. Babiec, Jr., Berwyn, and Joseph A. Meyers, Newtown Square, all of Pa., assignors to Atlantic Richfield Co., Los Angeles, Calif.

Filed Sep. 19, 1983, Ser. No. 533,711

Int. Cl.³ C08G 18/14, 18/77, 18/62, 18/24

U.S. Cl. 521—112 10 Claims

1. In a game ball comprised of a polyurethane foam sphere, the improvement comprising using as the polyurethane foam sphere a foam manufactured from a formulation comprising a liquid diene polymer having a molecular weight of about 500 to 5000 and 1.8 to 3 hydroxyl groups per molecule; a polyfunctional isocyanate containing 2 to 2.7 isocyanate groups per molecule; water; a first catalyst selected from dialkyl stannic diester, stannous diesters and mixtures of these; a second catalyst selected from tertiary amines; a first surfactant which is a non-hydrolyzable silicone-polyether copolymer and a second surfactant comprising at least one dialkylpolysiloxane.

6. In a method of manufacturing a spherical sports ball comprising injecting a polyurethane forming formulation into a closed mold having the desired configuration and causing the formulation to react and cure to a firm polyurethane foam, the improvement comprising preparing the polyurethane foam from a formulation comprised a liquid diene polymer having a molecular weight of about 500 to 5000 and 1.8 to 3 hydroxyl groups per molecule; a polyfunctional isocyanate containing 2 to 2.7 isocyanate groups per molecule; water; a first catalyt selected from dialkyl stannic diesters, stannous diesters and mixtures of these; a second catalyst selected from tertiary

amines; a first surfactant which is a nonhydrolyzable silicone-polyether compolymer and a second surfactant comprising at least one dialkylpolysiloxane.

4,454,254

AMINOPLAST RESINS, DISPERSIONS, AND LOW FLAMMABILITY CELLULAR AND NON-CELLULAR POLYURETHANE PRODUCTS PREPARED THEREFROM

Curtis J. Reichel; John T. Patton, Jr., both of Wyandotte, and Thirumurti Narayan, Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 1, 1982, Ser. No. 445,794

Int. Cl.³ C08G *18/14, 18/08, 18/64*

U.S. Cl. 521—136 **6 Claims**

1. A 1 to 80 percent by weight dispersion in a polyol of an aminoplast resin said resin prepared by reacting (a) urea or melamine, (b) formaldehyde, in the presence of a stabilizer compound and in the presence of an acid catalyst wherein the pH is maintained at 6.5 by means of a buffer solution, in aqueous solution at a temperature range from about 25° C. to about 100° C., (c) removing the solid resin from solution and (d) dispersing the resin in the polyol.

4,454,255

PROCESS FOR THE PREPARATION OF WHITE GRAFT POLYMER DISPERSIONS AND FLAME-RETARDANT POLYURETHANE FOAMS

Gerhard G. Ramlow, Grosse Ile; Duane A. Heyman, Monroe; Oscar M. Grace, Madison Heights; Curtis J. Reichel, Wyandotte, and Robert J. Hartman, Southgate, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 1, 1982, Ser. No. 364,336

Int. Cl.³ C08K *5/06, 5/10;* **C08L** *29/02, 51/08*

U.S. Cl. 521—137 **9 Claims**

1. In a process for the preparation of a white stable, low viscosity graft polymer dispersion which comprises the polymerization in a polyol mixture of from 5 to 60 weight percent based on the total weight of the polymer dispersion of an ethylenically unsaturated monomer, or mixture of said monomers, the improvement which comprises conducting the polymerization in a polyol mixture containing from 0.001 to 0.09 mole of induced unsaturation per mole of said polyol mixture.

4,454,256

DIELECTRICALLY HEATABLE POLYOLEFIN FOAMS

Bruno Pellicelli, Mapello, Italy, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,148

Claims priority, application Italy, May 11, 1982, 21191/82

Int. Cl.³ C08J *9/06*

U.S. Cl. 521—138 **8 Claims**

1. Dielectrically heatable, polyolefin foamed mouldings consisting essentially of from 3 to 20% by weight, based on the foam, of an unsaturated polyester obtained by a process which comprises mixing polyolefin and 3 to 20% by weight, based on the foam to be formed, of an unsaturated polyester with a foaming agent and a crosslinking agent, extruding the mixture to a moulding, and then crosslinking and foaming the moulding by heating the moulding.

4,454,257

ISOCYANURATE/IMIDE CROSS-LINKED RESINS AND FOAMS

Frederick J. Dechow, Midland, Mich., and William G. Stobby, Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 6, 1983, Ser. No. 482,399

Int. Cl.³ C08G *18/14, 18/38*

U.S. Cl. 521—157 **17 Claims**

1. An addition polymerizable composition containing isocyanurate moieties, ethylenically unsaturated moieties, and imide moieties, amic acid moieties, or a mixture of imide and amic acid moieties wherein (1) the isocyanurate moieties are present in an amount sufficient to initially gel a curable blend containing the composition and to provide sufficient heat to support addition polymerization of the ethylenically unsaturated moieties, (2) the ethylenically unsaturated moieties are present in an amount sufficient to enable the curable blend to form a dimensionally stable cross-linked resin upon addition polymerization of such unsaturated moieties, and (3) the imide or amic acid moieties are present in an amount sufficient to promote increased char yield of the cross-linked resin as determined by thermogravimetric analysis of the resin after it is exposed to heat.

2. A cross-linked resin formed by the addition polymerization of the composition of claim 1.

4,454,258

RESIN-FORMING MATERIAL, IMPLANT MATERIAL AND COMPOSITIONS FOR RESTORATIVE MATERIAL SUITABLE FOR MEDICAL OR DENTAL USE

Haruyuki Kawahara, Moriguchi; Teruo Makita, Kobe; Shozo Kudo, Minoo, and Takashi Funakoshi, Osaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Continuation of Ser. No. 138,814, Apr. 9, 1980, Pat. No. 4,327,014. This application Jan. 20, 1982, Ser. No. 340,689

Claims priority, application Japan, Apr. 11, 1979, 54-44752; Apr. 11, 1979, 54-44753

Int. Cl.³ C08K *3/28*

U.S. Cl. 523—116 **15 Claims**

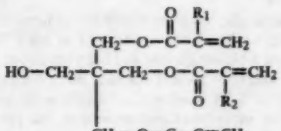
1. A composition of matter, especially useful as a dental filling material, consisting essentially of:

(A) from about 50 to about 95% by weight of finely divided, inorganic filler having a Moh's hardness of at least 5 and which filler is safe and effective for use in a dental filling in the human body, and

(B) from about 50 to about 5% by weight of polymerizable monomer component capable of polymerizing to form a binder resin, wherein said monomer component consists essentially of

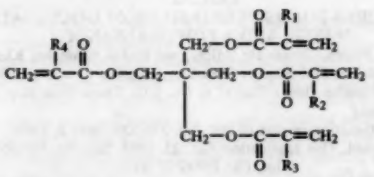
(1) from 60 to 100% by weight of a mixture consisting of

(a) from 30 to 95% by weight of first monomer having the formula (II)



(II)

and (b) from 5 to 70% by weight of second monomer having the formula (III)



(III)

wherein R_1, R_2, R_3 and R_4, which are the same or different, are hydrogen, methyl, ethyl, n-propyl or iso-propyl, and

(2) up to 40% by weight of at least one, third polymerizable monomer which is different from said first and

second polymerizable monomers and is suitable for use as a resin-forming monomer for dental filling materials.

4,454,259

PROCESS FOR THE PREPARATION OF POLYADDITION PRODUCTS OF ISOCYANATES AND DENATURED BIOMASSES, THEIR USE AS REACTIVE FILLERS AND AS PLANT NUTRIENTS AND A PROCESS FOR THE PRODUCTION OF SHEETS OR SHAPED ARTICLES USING THE POLYADDITION PRODUCTS

Artur Reischl, and Kuno Wagner, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 146,859, May 5, 1980, Pat. No. 4,393,166. This application Mar. 30, 1983, Ser. No. 480,536

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920525

Int. Cl.[3] **C02F** *11/14;* **C08L** *61/20, 61/32;* **C05C** *9/00;* **C08F** *8/28*

U.S. Cl. 523—129 **7 Claims**

1. A process for the production of denatured polyaddition products of biomasses and isocyanates, comprising reacting

(A) from 5 to 98%, by weight, based on (A)+(B), of a biomass based on microorganisms or derivative and decomposition products thereof with

(B) from 95 to 2%, by weight, based on (A)+(B), of a compound containing isocyanate groups, at temperatures of at least 50° C. with complete denaturing of component (A) wherein said biomass is further reacted with a carbonyl compound, a compound capable of aminoplast or phenoplast formation, or mixtures thereof, before, after, or during said isocyanate polyaddition reaction.

4,454,260

STABLE SUSPENSIONS OF WATER-SOLUBLE POLYMERS AND THEIR MANUFACTURE

Francois Dawans, Bougival; Daniel Binet, Rueil-Malmaison; Norbert Kohler, Saint Germain en Laye, and Quang D. Vu, Neuilly sur Sein, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 283,322, Jul. 15, 1981, Pat. No. 4,393,151. This application Jan. 18, 1983, Ser. No. 459,024

Claims priority, application France, Jul. 15, 1980, 80 15586

The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.

Int. Cl.[3] **C08J** *3/08;* **C08K** *5/01, 5/09;* **C08L** *5/00*

U.S. Cl. 523—130 **19 Claims**

1. A stable suspension of a water-soluble polymer in a liquid hydrocarbon medium resulting from the steps of

(1) mixing a liquid hydrocarbon medium, non-solvent for said water-soluble polymer and comprising at least one aliphatic or aromatic hydrocarbon, with at least one thickening agent selected from the alkali or alkaline-earth metal salts of fatty acids having 6–33 carbon atoms, in a proportion of from 0.1 to 5 parts by weight per 100 parts by weight of said liquid hydrocarbon medium, and

(2) adding to the resulting mixture solid particles of at least one water-soluble polymer in a proportion of from 40 to 150 parts by weight per 100 parts by weight of said liquid hydrocarbon medium, and based on 100 parts by weight of said solid particles of at least one water-soluble polymer at least one member selected from the group consisting of 0.1 to 10 parts by weight water, 0.1 to 50 parts by weight of a C_1–C_{12} aliphatic monoalcohol and 0.1 to 50 parts by weight of a C_2–C_{12} aliphatic diol.

4,454,261

POLYCARBONATE-CALCITE COMPOSITIONS

Russell P. Carter, Jr., New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1982, Ser. No. 358,391

Int. Cl.[3] **C08J** *5/18;* **C08K** *3/26;* **C08L** *69/00*

U.S. Cl. 523—200 **15 Claims**

1. A thin clear film of less than 10 mil in its thickness comprising

(i) an aromatic thermoplastic polycarbonate resin, and

(ii) between 0.025 to 5 phr of calcite having an average particle size of about 0.5 to about 10 microns.

4,454,262

ROOM TEMPERATURE CURABLE POLYORGANOSILOXANE COMPOSITION CONTAINING SPINDLE SHAPED CALCIUM CARBONATE

Miyoji Fukayama, and Tadao Ishida, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,337

Claims priority, application Japan, Apr. 27, 1981, 56/63656

Int. Cl.[3] **C08L** *83/06*

U.S. Cl. 523—210 **23 Claims**

1. A polyorganosiloxane composition comprising the product obtained by mixing

(A) 100 parts by weight of a polydiorganosiloxane expressed by the average general formula

$$(R'O)R^2_2SiO(R^2_2SiO)_nSiR^2_2(OR')$$

in which R is a monovalent radical selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals, R′ is a hydrogen atom or an alkyl radical, R^2 is selected from R or R'O, and n has a value such that the viscosity at 25° C. is in the range from 0.00005 to 1.0 m^2/s,

(B) 0.1 to 20 parts by weight of a crosslinking agent selected from silanes and siloxanes having at least two water-hydrolyzable radicals per molecule, said hydrolyzable radicals being selected from the group consisting of alkoxy radicals, ketoximo radicals, alkenyloxy radicals, aminoxy radicals, amino radicals, and amido radicals, and

(C) 5 to 300 parts by weight of calcium carbonate which has spindle-shaped particles, a specific surface area as measured by the BET method of 1 to 30 m^2/g, and an average particle size in the range of 0.3 to 10 μm.

4,454,263

VINYL CHLORIDE POLYMER PLASTISOL COMPOSITION

Richard E. Eroskey, Monroe Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 28, 1983, Ser. No. 489,684

Int. Cl.[3] **C08L** *27/06*

U.S. Cl. 523—400 **8 Claims**

1. A plastisol composition comprising a vinyl chloride polymer paste resin having an average particle size of from about 2 to 12 micrometers and from 50 to 400 parts by weight of a liquid plasticizer for said vinyl chloride polymer paste resin per 100 parts by weight of said vinyl chloride polymer paste resin, and as a minor constituent of said plastisol composition a combination of:

(a) a polybutadiene diepoxide resin or a cycloaliphatic diepoxide resin,

(b) an acid anhydride curing agent for said diepoxide resin, and

(c) a cure catalyst for said diepoxide resin,

said combination containing from 95 to 400 parts by weight of said acid anhydride curing agent for every 100 parts by weight of said diepoxide resin and from 6 to 50 parts by weight of said cure catalyst for every 100 parts by weight of said diepoxide resin.

4,454,264

HEAT CURABLE AQUEOUS LACQUER COATING COMPOSITION, ITS USE FOR ELECTRICAL DEPOSITION, AND A PROCESS OF CATHODIC DEPOSITION ONTO AN ELECTRICAL CONDUCTIVE SUBSTRATE

Hans-Peter Patzschke, and Armin Göbel, both of Wuppertal, Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschrankter Haftung, Wuppertal, Fed. Rep. of Germany

Continuation of Ser. No. 91,169, Nov. 5, 1979, abandoned. This application Jul. 2, 1981, Ser. No. 279,952

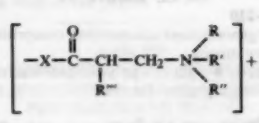
Claims priority, application Austria, Nov. 6, 1978, 7899/78

Int. Cl.³ C08L *63/02*

U.S. Cl. 523—414 **5 Claims**

1. Heat-hardenable aqueous paint coating material, based on a vehicle mixture that has been made water-thinnable with acid and, optionally, customary additives, wherein said vehicle contains in combination

(A) from 50 to 95% by weight of a polymer and/or polycondensate, containing tertiary amino-groups and OH-groups, (Component A), comprising the structural group



in which:

X=—O—, —NH— or —C_6H_4—,

R=C_nH_{2n+1} and N=from 1 to 5,

R'=C_mH_{2m+1} and m=from 1 to 5,

n+m=from 2 to 6

or R+R', in combination with the N-atom, form a piperidine ring or morpholine ring;

R''=—H, —C_pH_{2p+1} or —C_pH_{2p}OH and p=from 1 to 3,

R'''=—H, —CH_3 or —C_2H_5

and having an amine number of from 30 to 170 and an OH-number of 30 to 300;

(B) from 5 to 40% by weight of a fully blocked polyisocyanate, (Component B), which is stable in aqueous phase and becomes reactive again under the influence of heat, after dissociation of the blocking group;

(C) from 5 to 30% by weight of a polyaminoamide resin, (Component C).

4,454,265

AQUEOUS EPOXY-PHENOLIC COATINGS

Anthony J. Tortorello, Elmhurst, and Donald R. Roberts, Roselle, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 21, 1983, Ser. No. 477,490

Int. Cl.³ C09D *3/56, 3/58*

U.S. Cl. 523—420 **12 Claims**

1. An aqueous coating composition adapted to thermoset on baking comprising, water having dispersed therein diglycidyl ether of a bisphenol having a 1,2-epoxy equivalency of at least 1.2 and an average molecular weight of from about 2000 to about 5000, adducted with a stoichiometric proportion, based on epoxy and secondary amine, of diprimary amine having a single secondary amine group and each primary amine group blocked by a ketimine group, at least about 50% of the amine groups of said adduct being protonated with a volatile acid, said ketimine groups being hydrolyzed in the aqueous medium to provide primary amine groups therein, and from 20% to 50%, based on total resin solids, of water insoluble, heat-hardening phenol-formaldehyde resin curing agent.

4,454,266

RELEASE COATING COMPOSITIONS

Raymond T. Coughlan, Darien, and Suzette M. Bojarski, Tinley Park, both of Ill., assignors to Daubert Coated Products Inc., Chicago, Ill.

Filed Apr. 11, 1983, Ser. No. 483,765

Int. Cl.³ B29H *21/04;* **C08L** *1/28*

U.S. Cl. 524—44 **4 Claims**

1. A differential release coated sustrate for use as a liner for pressure sensitive adhesive label transfer tapes in roll form, comprising: a plastic coated substrate material having a matte side and a gloss side, the matte side of the substrate having a differential release coating thereon formed of a composition consisting essentially of a major proportion of a water soluble cellulosic substance, a minor porportion of an organopolysiloxane and a curing agent for the organopolysiloxane, the gloss side of the substrate having a differential release coating thereon formed from a composition consisting essentially of a major proportion of water, and a minor proportion, each, of a water soluble cellulosic substance, an organopolysiloxane, a curing agent for the organopolysiloxane, and a terpolymer formed of acrylic acid, acrylonitrile and esters of a substituted acrylic acid, the release coating on the gloss side of the substrate having a higher release value than the release coating on the matte side of the substrate, the differential release coatings being characterized in that they do not undergo any appreciable change in their respective release values during prolonged storage.

4,454,267

LIGHTWEIGHT JOINT COMPOUND

Terrance L. Williams, Crystal Lake, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Dec. 20, 1982, Ser. No. 450,823

Int. Cl.³ C08K *3/00, 5/54, 9/04, 9/06*

U.S. Cl. 524—43 **28 Claims**

1. A lightweight joint compound having properties suitable for use in finishing joints between the edges of adjacent wallboards, said joint compound consisting essentially of:

(1) a filler selected from the group consisting of calcium carbonate and calcium sulfate,

(2) a non-leveling agent,

(3) expanded perlite which has been treated with a silicone compound to render it water-insensitive present in an amount of from about 3.5% to about 25% based on the dry weight of said joint compound,

(4) a thickener,

(5) a binder, and

(6) sufficient water to adjust the viscosity to render said joint compound suitable for use.

4,454,268

STARCH-BASED SEMIPERMEABLE FILMS

Felix H. Otey, and Richard P. Westhoff, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 23, 1983, Ser. No. 507,191

Int. Cl.³ C08L *3/02*

U.S. Cl. 524—47 **16 Claims**

1. A method of preparing a semipermeable film comprising the following steps:

a. converting a mixture comprising a starchy material (SM), an ethylene acrylic acid copolymer (EAA), and a strong alkali into a plasticized matrix, wherein the ratio of SM:EAA is in the range of 20:80 to about 60:40 parts on a dry weight basis, wherein the strong alkali is present in an amount sufficient to neutralize substantially all of the EAA, and wherein the starchy material in the plasticized matrix is highly gelatinized; and

b. shaping said matrix into a film.

4,454,269

METHOD FOR PREPARING INDUSTRIAL GRADE ASPHALT USING AN ASPHALT-POLYMER BLEND

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 30, 1982, Ser. No. 454,762
Int. Cl.³ C08L 31/00
U.S. Cl. 524—69 15 Claims

1. A method for producing industrial asphalt comprising the steps of:

(a) preheating asphalt to a temperature of from 200° F. to 350° F.;

(b) mixing thoroughly into the asphalt from about 1 weight percent to about 10 weight percent ethylene/vinyl-acetate copolymer (EVA) and from about 0.1 weight percent to about 5 weight percent of an air-blowing asphalt catalyst;

(c) charging the asphalt/EVA/catalyst mixture into an asphalt air-blowing still;

(d) heating the mixture to a temperature of from about 400° F. to about 550° F.;

(e) blowing through the mixture gas selected from the group consisting of air, oxygen, and an oxygen/inert gas mixture for sufficient time to cause the asphalt mixture to reach a preselected softening point.

4,454,270

METHOD AND COMPOSITION FOR PREVENTING OR SUPPRESSING DISCOLORATION IN POLYOLEFINS

William Kolodchin, and Kestutis A. Keblys, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 330,274, Dec. 14, 1981, abandoned. This application Mar. 31, 1982, Ser. No. 363,668
Int. Cl.³ C08K 5/34, 5/13, 5/10
U.S. Cl. 524—102 21 Claims

1. A composition of matter comprising:

a major portion of a polyolefin containing residual catalyst metal contaminants causing discoloration in combination with a phenolic antioxidant in said polyolefin;

a minor portion of a phenolic antioxidant protecting said polyolefin; and

a bipyridine present in an amount effective to suppress and or prevent discoloration of the antioxidant protected, metal-contaminated polyolefin.

4,454,271

BLENDS OF POLYPHENYLENE ETHER RESINS AND STYRENE-TERT-BUTYLSTRYENE COPOLYMERS

Glenn D. Cooper, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 327,440, Dec. 4, 1981, Pat. No. 4,389,511. This application Mar. 17, 1983, Ser. No. 476,389
Int. Cl.³ C08L 71/04
U.S. Cl. 525—132 4 Claims

1. A thermoplastic composition, which comprises a homogeneous, single phase admixture of:

(a) a polyphenylene ether resin; and

(b) a copolymer consisting essentially of styrene and from 5% to 65% by weight of 4-tert-butyl-styrene based on the total copolymer weight.

4,454,272

SLIP AND BLOCK ADDITIVES FOR OLEFIN POLYMERS

Osborne K. McKinney, and David P. Flores, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 256,268, Apr. 28, 1981, Pat. No. 4,394,474. This application May 16, 1983, Ser. No. 495,020
Int. Cl.³ C08J 5/18
U.S. Cl. 524—241 14 Claims

1. A composition of matter comprising a blend of polymer, secondary fatty acid amide, and finely-divided naturally-occurring mineral,

said polymer being characterized as one comprising ethylene copolymerized with a minor amount of at least one alpha, beta-ethylenically-unsaturated alkene having from 3 to 12 carbon atoms by the action of a coordination catalyst to produce a linear, low density copolymer having a density in the range of about 0.90 to about 0.94 gms./cc and a melt flow value in the range of about 0.1 gm./10 min. as measured by ASTM-D-1238(E) to about 20 gms./10 min. as measured by ASTM-D-1238(D).

4,454,273

Patent Not Issued For This Number

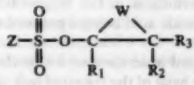
4,454,274

AMINOPLAST CURABLE COATING COMPOSITIONS CONTAINING CYCLOALIPHATIC SULFONIC ACID ESTERS AS LATENT ACID CATALYSTS

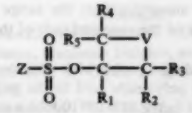
Debra L. Singer, Pittsburgh; Gregory J. McCollum, Glenshaw; Rostyslaw Dowbenko, and Roger M. Christenson, both of Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 29, 1982, Ser. No. 427,400
Int. Cl.³ C08F 8/36
U.S. Cl. 524—157 22 Claims

1. An organic solvent based coating composition having a total solids content of at least 50 percent and which is sprayable, said coating composition being capable of acid catalyzed crosslinking, comprising an active hydrogen-containing resin, a curing agent present externally and/or internally as a part of the active hydrogen-containing resin, and a catalytic amount of a non-ionic ester of a sulfonic acid represented by the following structural formulas:



(I)



(II)

wherein:

Z is a radical selected from the group consisting of amino and an organic radical, said organic radical being connected to the sulfur atom by a carbon atom;

W is C_1–C_{18} alkylene, C_2–C_{18} alkenylene;

V is C_1–C_{18} alkylene, C_1–C_{18} hydroxyl substituted alkylene, C_2–C_{18} alkenylene, C_2–C_{18} hydroxyl substituted alkenylene; and

R_1, R_2, R_3, R_4, R_5 are independently hydrogen or an organic radical.

4,454,275

FLAME RETARDANT COPOLYESTER-CARBONATE COMPOSITIONS

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 236,591, Feb. 20, 1981, abandoned. This application Aug. 11, 1982, Ser. No. 407,129

Int. Cl.³ C08K *7/14*

U.S. Cl. 524—164 **11 Claims**

1. An aromatic copolyester carbonate composition which obtains a pass rating under the procedures of a modified ASTM D-3713 consisting essentially of in admixture

(i) a nonhalogenated aromatic copolyester carbonate derived from a dihydric phenol, an aromatic dicarboxylic acid, reactive derivative of an acid or mixtures thereof, and a carbonate precursor, said aromatic dicarboxylic acid or reactive derivative thereof being present as residue in the aromatic polyestercarbonate in a mole percent of from about 25 to about 90 mole percent based on the moles of dihydric phenol;

(ii) a flame retardant effective amount of at least one compound selected from the group consisting of alkali metal salts of an organic sulfonic acid and alkaline earth metal salts of organic sulfonic acid;

(iii) an anti-dripping effective amount of a type 3 fluorinated polyolefin; and

(iv) the essential absence of glass fibers.

4,454,276

POLYAMIDE ACID COMPOSITION FOR PREPARING POLYIMIDE AND PROCESS FOR PREPARING POLYIMIDE FROM THE SAME

Junji Uda; Tsuneo Yamamoto, both of Ootsu, and Takumi Kosugi, Kobe, all of Japan, assignors to Kanegafuchi Chkagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 428,394

Claims priority, application Japan, Jan. 8, 1982, 57-1928; Jan. 8, 1982, 57-1929

Int. Cl.³ C08G *73/10*; C08K *5/07, 5/16, 5/20*

U.S. Cl. 524—209 **8 Claims**

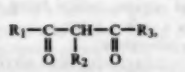
1. A polyamide acid composition for preparing a polyimide which can extend the pot life of the composition, said composition comprising;

(a) a solution of a polyamide acid in an organic solvent the solid content of which is in the range of 1 to 30% by weight, the polyamide acid being a precursor of the polyimide,

(b) a dehydrating agent in an amount within the range of 0.5 to 10 moles on the basis of the repeated unit of the polyamide,

(c) a catalyst in an amount within the range of 0.01 to 4 moles on the basis of the repeated unit of the polyamide, and

(d) a pot life extending agent which can lower a rate of conversion of the polyamide acid to the polyimide in an amount within the range of 0.05–10 moles on the basis of the repeated unit of the polyamide, said pot life extending agent being at least one member selected from the group consisting of a compound of the general formula (I):

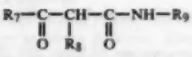


(I)

a compound of the general formula (II):

(II)

a compound of the general formula (III):



(III)

and a compound of the general formula (IV):

(IV)

wherein R_1, R_3, R_4, R_6, R_7 and R_9 are the same or different and each is an aliphatic group having 1 to 12 carbon atoms or an aromatic group, R_2, R_5, R_8 and R_{10} are hydrogen, an aliphatic group having 1 to 12 carbon atoms or an aromatic group, and, R_1 and R_3, R_4 and R_6, R_7 and R_9 in the respective formula may be bound together to form a ring.

4,454,277

PREPARATIONS OF STORAGE-STABLE AQUEOUS SOLUTIONS OF MELAMINE-FORMALDEHYDE RESINS

Friedl Heger, Linz, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Continuation-in-part of Ser. No. 294,094, Aug. 19, 1981, abandoned. This application Apr. 5, 1982, Ser. No. 365,126

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048448

Int. Cl.³ C08K *5/21*

U.S. Cl. 524—211 **7 Claims**

1. In a process for the preparation of a storage-stable aqueous solution of a melamine-formaldehyde resin by the addition of urea after condensation has taken place, the improvement which comprises the steps of adjusting the pH of an aqueous mixture of melamine and formaldehyde wherein the molar ratio of melamine to formaldehyde is within the range of 1:1.7 to 1:3.5, at room temperature, to a value of from 8.5 to 9.5, condensing the mixture at a temperature of from about 90° C. to the reflux temperature until a degree of condensation is reached which corresponds to a water compatibility of from 3.0 to 5.0, thereafter cooling the resulting resin solution to a temperature within the range of 25° to 50° C., adjusting the pH thereof to a value of from 7 to 9.6 and adding urea in an amount of 1 to 10% by weight, relative to the liquid resin having a solids content of 50 to 60% by weight, following which the pH of the resin solution is adjusted to a value of from 9.2 to 11.5.

4,454,278

POLYESTERCARBONATES ADAPTABLE FOR WIRE ENAMELS

Daniel W. Fox, Pittsfield, Mass., and John J. Keane, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,916

Int. Cl.³ C08G *63/64*

U.S. Cl. 524—343 **10 Claims**

1. A polyester resin having high heat resistance comprising the reaction product of:

(a) an aromatic ester of a dicarboxylic acid;

(b) an aromatic ester of a tricarboxylic acid;

(c) an aromatic carbonate; and

(d) a polyhydric phenol having at least di-functionality said resin being obtained by curing said reaction product with heat in the presence of a transesterification catalyst.

4,454,279

THICKENER MIXTURE FOR THE MANUFACTURE OF AQUEOUS PRINTING INKS FOR GRAVURE PRINTING HEAT SUBLIMABLE DISPERSE DYESTUFFS

Sienling Ong, Hofheim am Taunus; Ulrich Karsunky, Hünfelden, and Helmut Schmidt, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 378,413, May 14, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,883

Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119711

Int. Cl.³ C08F *5/05*

U.S. Cl. 524—376 **3 Claims**

1. A thickener mixture for the manufacture of aqueous printing inks suitable for gravure printing heat sublimable dispere dyestuffs onto transfer printing paper sheets which comprises a combination having as the ingredients:

(a) a copolymer of vinyl acetate and an unsaturated low molecular weight carboxylic acid,

(b) a copolymer of maleic anhydride and ethylene, or a polyacrylic acid,

(c) a compound of the formula

$$C_nH_{2n+2-m}(OH)_m$$

in which n is an integer of from 4 to 6 and m is an integer of from 1 to 6, with the proviso that m is smaller than or identical to n,

(d) a compound of the formula

$$C_aH_{2a+2-b}[O(CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O)_{x/b}-H]_b$$

in which a is an integer of from 2 to 6, b is an integer of from 1 to 6, and x is a number of from 8 to 60, with the proviso that b is smaller than or identical to a, and

(e) a compound of the formula

$$C_yH_{2y+2-z}(OH)_z$$

in which y and z each are an integer of from 1 to 6 with the proviso that z is smaller than or identical to y.

4,454,280

POLYMERS HAVING REDUCED CARBON MONOXIDE GENERATION UPON BURNING

David F. Lawson, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 249,515, Mar. 31, 1981, Pat. No. 4,361,668. This application Jul. 29, 1982, Ser. No. 402,881

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—398 **1 Claim**

1. A polymeric composition comprising:

a nitrogen-free polymer selected from the group consisting of an elastomer, a thermoplastic, a thermoplastic elastomer, a thermoset, and combinations thereof;

the polymeric composition containing an alkaline earth metal salt, the amount of said alkaline earth metal salt ranges from about 50 parts to about 150 parts by weight per 100 parts of said elastomer polymer or said thermoset polymer;

wherein the amount of said alkaline earth metal salt ranges from about 25 parts to about 100 parts by weight per 100 parts of said thermoplastic or said thermoplastic elastomer,

wherein said alkaline earth metal salt is calcium hydroxide, said polymeric composition containing a catalyst, said catalyst being a metal salt of a compound selected from the group consisting of a monocarboxylic acid having from 2 to 30 carbon atoms, a dicarboxylic acid having from 4 to 18 carbon atoms, a detergent, an anion, and combinations thereof, the amount of said catalyst ranging from about 0.1 to about 10 parts by weight per 100 parts of said polymer;

wherein said metal portion of said catalyst is selected from the group consisting of iron, cobalt, manganese, and combinations thereof; and

wherein said polymeric composition has reduced smoke generation upon burning in the absence of an open flame.

4,454,281

FORMULATION FOR HIGH CLARITY LINEAR LOW DENSITY POLYETHYLENE FILM PRODUCTS

William D. Heitz, Flagtown; George E. Ealer, Whitehouse Station, and Gary S. Cieloszyk, Somerville, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 1, 1982, Ser. No. 445,944

Int. Cl.³ C08K *5/09;* **C08L** *23/08*

U.S. Cl. 524—399 **6 Claims**

1. An ethylene polymer film forming composition comprising a linear narrow molecular weight distribution ethylene hydrocarbon copolymer containing greater than or equal to 85% ethylene and less than or equal to 15% of one or more C_3 to C_8 alpha-olefin, from about 500 to about 5000 parts per million of a zinc salt of a fatty acid having from 7 to 22 carbon atoms and from about 500 to 4000 ppm of an inorganic antiblocking agent.

4,454,282

WATER-BASED CHROMIUM DIOXIDE MAGNETIC RECORDING MEDIA

Richard L. Bradshaw; Samuel J. Falcone, and Alexander Simonetti, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,196

Int. Cl.³ B32B *5/16;* **C08L** *75/04;* **C09D** *11/00*

U.S. Cl. 524—407 **11 Claims**

1. A method of making a stable, non-agglomerating, magnetic recording coating ink, which is free of organic solvents, for use in coating a flexible nonmagnetic substrate, said ink having ferromagnetic chromium dioxide particles dispersed in a water-based polyurethane binder, the method comprising the ordered steps of:

first dispersing said particles in water and a polymeric surfactant/dispersant agent which has carboxylic acid, as its major functionality in a side chain, as a free acid, sodium salt, ester or amide thereof, and having a number average molecular weight in the range of about 500 to 20,000, to thereby form a slurry; and

only thereafter adding said water-based polyurethane binder to said slurry of prior-dispersed particles.

4,454,283

BIS-MALEIMIDE RESIN WITH INHIBITOR

Sidney W. Street, Hacienda Heights, and Don A. Beckely, Newport Beach, both of Calif., assignors to HITCO, Newport Beach, Calif.

Continuation of Ser. No. 248,978, Mar. 30, 1981, Pat. No. 4,377,657, which is a division of Ser. No. 134,666, Mar. 27, 1980, Pat. No. 4,351,932. This application Jan. 24, 1983, Ser. No. 460,449

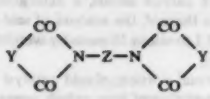
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ C08L *39/04*

U.S. Cl. 524—424 **11 Claims**

1. A resin system consisting essentially of:

50 to 95 percent by weight of a mixture of unsaturated N,N'-bis-imides of the formula:



where Y represents a divalent radical of at least 2 carbon atoms and contains a carbon-carbon double bond and in major portion of the mixture, Z is the residue of at least one aromatic diamine and in the minor portion of the mixture Z is the residue of an aliphatic diamine;

5 to 35 percent by weight of a divinyl-arylene, cross-linking agent capable of addition polymerization cross-linking with the bis-imides at a temperature from above 100 degrees F. to 250 degrees F.; and

0.5 to 5 percent by weight of an oxidation inhibitor.

4,454,284

RESIN COMPOSITIONS CONTAINING POLYPHENYLENE OXIDE AND OLEFIN-GLYCIDYL (METH)ACRYLATE COPOLYMER

Katsuji Ueno, Hirakata; Takashi Maruyama, Kobe, and Kazuo Hayatsu, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 333,022

Claims priority, application 12251980, Dec. 25, 1980, 55-186309

Int. Cl.³ C08L *71/04*

U.S. Cl. 524—427 **13 Claims**

1. A melt-blended resin composition comprising a mixture of

(A) a polyphenylene oxide resin or a resin composition containing polyphenylene oxide, and

(B) a copolymer of an olefin and glycidyl methacrylate and/or glycidyl acrylate, containing said olefin in an amount of 1 to 99% by weight.

4,454,285

METHOD FOR PREPARING GLASS-FIBER REINFORCED CEMENT COMPOSITES

Jan M. J. M. Bijen, Munstergeleen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 111,298, Jan. 11, 1980, abandoned, which is a continuation of Ser. No. 937,842, Aug. 29, 1978, abandoned. This application Sep. 3, 1982, Ser. No. 414,800

Claims priority, application Netherlands, Aug. 30, 1977, 7709521

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—5 **11 Claims**

1. Process for manufacturing a non-porous cement composite comprising the steps of,

(a) admixing a water hardening cement, glass fibers, a resin dispersion, and water, to form a cement mortar;

(b) forming said mortar into a predetermined shape; and

(c) hardening said mortar, wherein

(i) said resin dispersion comprises a copolymer of about 10% to about 20% by weight of methacrylic acid, about 50% by weight styrene and the balance by weight of butyl acrylate dispersed in water, which resin has a mean particle size of between about 0.05 and about 5 microns;

(ii) the ratio of said water to said water hardening cement ranges from about 0.2 to about 0.5;

(iii) the weight ratio of said resin dispersion to said water hardening cement ranges from about 0.02 to about 0.4; and

(iv) said glass fibers being present in an amount not exceeding about 40 percent by volume.

4,454,286

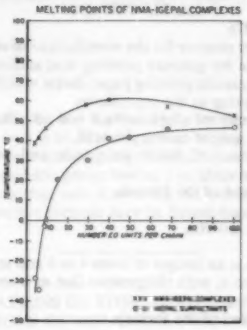
COMPLEXES OF N-METHYLOLACRYLAMIDES WITH POLYALKOXYLATES AND POLYMERIZATION TO UNGELLED POLY(N-METHYLOLACRYLAMIDES)

Wiley E. Daniels, Easton, and Dennis J. Nagy, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

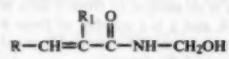
Division of Ser. No. 303,732, Sep. 21, 1981, Pat. No. 4,393,173. This application Apr. 11, 1983, Ser. No. 484,061

Int. Cl.³ C08L *33/24*

U.S. Cl. 524—503 **20 Claims**



1. A method for preparing a composition of matter which comprises mixing in an aqueous medium an N-methylol monomer of the general formula:



wherein R is hydrogen, lower alkyl (C_1–C_4), isopropenyl or phenyl radical and R_1 is hydrogen or methyl radical, and a polyalkoxylate having at least a portion of its structure represented by $(alkylene\ oxide)_x$ wherein x is an integer greater than one, in an N-methylol monomer:polyalkoxylate molar ratio of at least about x:1.

4,454,287

GLASS REINFORCED POLYOLEFIN COMPOSITES MODIFIED WITH AROMATIC POLYCARBONATES

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 22, 1982, Ser. No. 452,058

Int. Cl.³ C08L *69/00*

U.S. Cl. 524—508 **6 Claims**

1. A composition comprising in admixture

(a) a thermoplastic polyolefin resin having incorporated therein from about 5 to 30 parts by weight of glass fibers per 100 parts by weight total of said resin and said glass; and

(b) a high molecular weight aromatic polycarbonate resin derived from 2,2-bis(4-hydroxyphenyl)propane in sufficient quantities to impact modify (a) and being present in from about 5 to about 30 parts by weight per 100 parts by weight of (a) and (b) together.

4,454,288

SURFACE TREATMENT OF INORGANIC FILLERS

Kenneth M. Lee, Bay City, and Katherine L. Ulman, Sanford, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1982, Ser. No. 446,297
Int. Cl.³ C08L 83/00
U.S. Cl. 524—588 27 Claims

1. A method of surface treating a particulate inorganic filler which comprises the steps of

(A) contacting 100 parts by weight of a particulate inorganic filler with a surface treating agent comprising at least one component which is an equilibrated reaction mixture consisting essentially of $R_2SiO_{2/2}$ units, $RSiO_{3/2}$ units and $CH_3O_{1/2}$ radicals, there being A moles of $R_2SiO_{2/2}$ units per mole of $RSiO_{3/2}$ units present in said mixture and B moles of said $CH_3O_{1/2}$ radicals, said A having an average value of from 0.5 to 10 and B having an average value of from 3 to 6, the value of B being related to A such that when A=0.5, B=6 and when A=10, B=3, and wherein R is selected from the group consisting of hydrocarbon radicals of from 1 to 10 inclusive carbon atoms and haloalkyl radicals of from 1 to 10 inclusive carbon atoms, said reaction mixture (1) having been prepared by equilibration in the presence of a catalyst for the equilibration reaction and (2) having an overall average molecular weight of less than 500, there being at least 5 and up to 50 parts of weight of said equilibrated reaction mixture based on the total weight of $R_2SiO_{2/2}$ and $RSiO_{3/2}$ units present in the mixture per 100 parts by weight of said filler, and

(B) maintaining said surface-treating agent in contact with said filler for a sufficient amount of time to obtain a hydrophobic, surface-treated particulate inorganic filler.

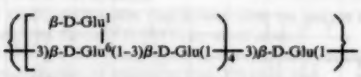
4,454,289

POLYSACCHARIDES HAVING ANTICARCINOGENIC ACTIVITY AND METHOD FOR PRODUCING SAME

Kazuo Nakajima, Kyoto; Yoshiaki Hirata; Hiroyuki Uchida, both of Otsu; Tomoko Shiomi, Uji; Tsutomu Taniguchi, Kyoto; Akira Obayashi; Osamu Tanabe, both of Uji, and Takuma Sasaki, Tokyo, all of Japan, assignors to Takara Shuzo Co., Ltd., Japan

Filed Feb. 23, 1982, Ser. No. 351,364
Claims priority, application Japan, Mar. 6, 1981, 56-32797; Sep. 3, 1981, 56-139039
Int. Cl.³ C08B 37/00
U.S. Cl. 536—1.1 5 Claims

1. A β-1,3-glucan composed of repeated glucopyranose units, each unit being represented by the formula:



having an intrinsic viscosity (η)=20–25, a molecular weight of more than 2.5×10^5 by the gel filtration method and an anticarcinogenic activity against Sarcoma-180, Ehrlich carcinoma, Ehrlich ascites tumor and Meth-A (fibrosarcoma), said β-1,3-glucan being produced by a process which consists essentially of forming a filtered broth from a culture medium or liquid extract of fruitbodies or mycelium of a strain which is capable of producing the β-1,3-glucan and belongs to the genus Pseudoplectania of the class Discomycetes, and recovering the β-1,3-glucan from the filtered broth or liquid extract in a purified form.

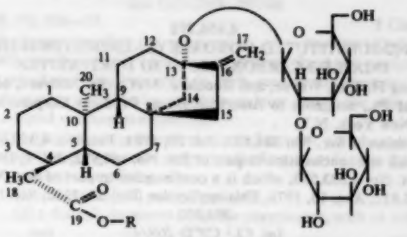
4,454,290

STEVIOSIDE ANALOGS

Grant E. DuBois, Palo Alto, Calif., assignor to Dynapol, Palo Alto, Calif.

Continuation-in-part of Ser. No. 189,243, Sep. 22, 1980, Pat. No. 4,332,830. This application Jun. 11, 1981, Ser. No. 272,798
Int. Cl.³ C07H 15/24
U.S. Cl. 536—18.1 13 Claims

1. A steviol analogue compound having the structure



where R is a member selected from the group consisting of 1–5 carbon alkyl terminal sulfonates, alkyl polysulfonates of the formulae $—CH_2—CH—(SO_3^-M^+)_2$, $—(CH_2)_2—CH—(SO_3^-M^+)_2$, and $—CH_2—CH—(SO_3^-M^+)—CH_2—CH_2—SO_3^-M^+$, 1–5 carbon alkyl terminal carboxylates, an alkyl polycarboxylate of the formula $—CH_2—COO^-M^+—(CH_2)_2—COO^-M^+$, 1–5 carbon alkyl terminal phosphonates, polyhydroxyl alkyls of the formulae $—(CH_2)_n—CH(OH)—CH(OH)—CH_2OH$ and $—(CH_2)_n—CH(OH)—CH_2OH$ wherein n is 1 or 2, 1–5 carbon alkyl primary amine salts of the formulae $—(CH_2)_n—NH_3^+N^-$ wherein n is an integer from 1 to 5 inclusive, 1–5 carbon alkyl sulfonates and 1–5 carbon alkyl amino-carboxylates wherein M^+ is a physiologically acceptable alkali metal or alkaline earth metal cation and X^- is a physiologically acceptable anion.

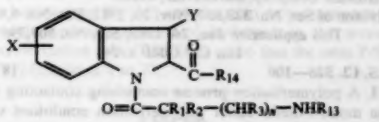
4,454,291

N-(2-SUBSTITUTED-1-OXOALKYL)-2,3-DIHYDRO-1H-INDOLE-2-CARBOXYLIC ACID DERIVATIVES

Dong H. Kim, Wayne, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 284,433, Jul. 20, 1981, Pat. No. 4,350,633, which is a continuation-in-part of Ser. No. 164,992, Jul. 1, 1980, Pat. No. 4,303,583, which is a continuation-in-part of Ser. No. 065,817, Aug. 13, 1979. This application Jun. 22, 1982, Ser. No. 391,080
Int. Cl.³ C07D 209/42
U.S. Cl. 548—491 11 Claims

4. A compound of the formula:



wherein:

n is 1 or 0;

R_1 is hydrogen, lower alkyl, aryl or aralkyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl or aroyl;

X is hydrogen, hydroxy, lower alkyl, lower alkoxy or halogen;

Y is hydrogen, lower alkyl or aryl;

R_{13} is hydrogen or lower alkyl; and

R_{14} is R_5 or OZ, where R_5 is hydroxy, amino, or lower alkoxy, and Z is a carboxylic acid protecting group;

wherein aryl refers to phenyl or phenyl substituted by a halogen, lower alkyl, or lower alkoxy group; aralkyl refers to benzyl or benzyl substituted on the phenyl ring by a halogen, a lower alkyl or a lower alkoxy group; and aroyl refers to benzoyl or benzoyl substituted on the phenyl ring by a halogen, lower alkyl or lower alkoxy group.

4,454,292

N-[2-SUBSTITUTED-1-OXOALKYL]-2,3-DIHYDRO-1H-INDOLE-2-CARBOXYLIC ACID DERIVATIVES

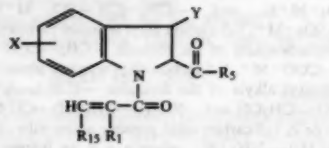
Dong H. Kim, Wayne, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 284,433, Jul. 20, 1981, Pat. No. 4,350,633, which is a continuation-in-part of Ser. No. 164,992, Jul. 1, 1980, Pat. No. 4,303,583, which is a continuation-in-part of Ser. No. 065,817, Aug. 13, 1979. This application Jun. 22, 1982, Ser. No. 391,081

Int. Cl.³ C07D *209/42*

U.S. Cl. 548—491 **2 Claims**

2. A compound of the formula:



wherein:

R_1 is hydrogen, lower alkyl, aryl or aralkyl;

R_{15} is hydrogen or lower alkyl;

R_5 is hydroxy, amino, or lower alkoxy;

X is hydrogen, hydroxy, lower alkyl, lower alkoxy or halogen; and

Y is hydrogen, lower alkyl or aryl;

wherein aryl refers to phenyl or phenyl substituted by a halogen, a lower alkyl, or a lower alkoxy group; and aralkyl refers to benzyl or benzyl substituted on the phenyl ring by a halogen, a lower alkyl or a lower alkoxy group.

4,454,293

POLYMERIZATION USING PARTIALLY HYDROLYZED SILICATE TREATMENT OF CATALYST SUPPORT

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 323,854, Nov. 20, 1981, Pat. No. 4,419,268. This application Jun. 24, 1983, Ser. No. 507,394

Int. Cl.³ C08F *4/24*

U.S. Cl. 526—106 **18 Claims**

1. A polymerization process comprising contacting at least one mono-1-olefin under polymerization conditions with an activated catalyst prepared by a process comprising

combining a silica organosol produced by the partial hydrolysis of a silicate ester to give an organosilicon compound having a plurality of silicon atoms per molecule with a support selected from a silica-containing material which is 80–100 weight percent silica or an aluminum phosphate to form a catalyst base, said base containing in addition a chromium compound, the thus produced chromium containing base being calcined in air to produce said activated catalyst.

4,454,294

POLYVINYL CHLORIDE FILM HAVING SPECIFIC PROPERTIES, AND A PROCESS FOR ITS MANUFACTURE

Erich Zentner, Burgkirchen, and Wilhelm Bingemann, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 13, 1982, Ser. No. 407,757

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133507

Int. Cl.³ C08J *5/18*

U.S. Cl. 526—344.3 **10 Claims**

1. A stretched and delustered polyvinyl chloride film, which has

(a) a surface having roughness values, measured in accordance with DIN 4,768, of R_a of 1 to 3μ and of R_z of 5 to 15μ,

(b) a luster value, measured in accordance with DIN 67,530 at an incident light angle of 85°, of 15 to 70% and

(c) a change in dimension, measured in accordance with DIN 53,377, on heating of the film up to 140° C. of −25 to −75% in transverse direction of the film and of less than −10% in longitudinal direction of the film, and which

(d) retains the delustered surface texture on heating up to 140° C.

4,454,295

CURED CELLULOSE ESTER, METHOD OF CURING SAME, AND USE THEREOF

Joseph W. Wittmann, and John M. Evans, both of Rochester, N.Y., assignors to UCO Optics, Inc., Rochester, N.Y.

Division of Ser. No. 321,506, Nov. 16, 1981, Pat. No. 4,395,496. This application Jul. 25, 1983, Ser. No. 517,166

Int. Cl.³ C08G *77/20, 77/04;* C08L *1/02*

U.S. Cl. 527—311 **12 Claims**

1. A composition from the polymerization of a composition comprising an organic cellulose ester selected from the group of cellulose acetate, cellulose acetate butyrate, cellulose acetate propionate or mixtures thereof; and a polymerizable ethylenically unsaturated silicone ester.

4,454,296

TRIISOCYANATES AND THEIR PRODUCTION AND USE

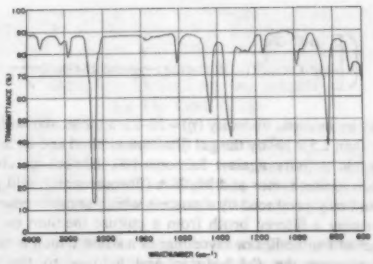
Kimiya Fujinami, Takarazuka; Ichiro Minato, Kobe, and Koichi Shibata, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 154,135, May 29, 1980, Pat. No. 4,338,256. This application Apr. 22, 1982, Ser. No. 370,999

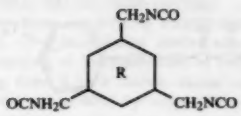
Claims priority, application Japan, May 29, 1979, 54-67171

Int. Cl.³ C08G *18/00, 18/67*

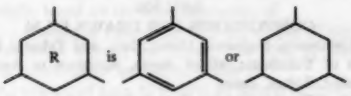
U.S. Cl. 528—75 **7 Claims**



1. A coating composition which comprises polyurethane resin produced by reacting a compound of the formula:



wherein



with an active hydrogen compound.

4,454,297

2-[2-AMINOETHOXY-2-ETHYLAMINO]ALKANOL AS AN EPOXY CURING AGENT

Harold G. Waddill, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 14, 1983, Ser. No. 458,225

Int. Cl.³ C08G *59/64*

U.S. Cl. 528—111 **2 Claims**

1. An epoxy resin composition comprising

(A) a diglycidyl ether of Bisphenol A of epoxy equivalent weight 185 to 190, and

(B) a curing amount of curing agent of the formula:

$$HOCH_2CH_2NHCH_2CH_2OCH_2CH_2NH_2.$$

4,454,298

GRANULAR OR POWDERY PHENOL-ALDEHYDE RESIN AND PROCESS FOR PRODUCTION THEREOF

Hiroaki Koyama, and Shigeo Shimizu, both of Kobe, Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,833

Claims priority, application Japan, Dec. 25, 1981, 56-209314; Feb. 19, 1982, 57-24295

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.³ C08G *8/10, 14/06, 14/08*

U.S. Cl. 528—137 **35 Claims**

1. A granular or powdery resin which is a condensation product of a phenol and an aldehyde and optionally a nitrogen-containing compound having at least two active hydrogens, said granular or powdery resin being characterized by

(A) containing spherical primary particles and secondary particles resulting from the agglomeration of the primary particles, each of said particles having a particle diameter of 0.1 to 150 microns,

(B) having such a size that at least 50% by weight thereof can pass through a 100 Tyler mesh sieve,

(C) having a free phenol content, determined by liquid chromatography, of not more than 500 ppm, and

(D) having a methanol solubility, S defined by the following equation, of more than 20% by weight

$$S = \frac{W_o - W_1}{W_o} \times 100(\%)$$

wherein W_o is the weight in grams of the resin, and W_1 is the weight in grams of the resin left after heating under reflux,

when about 10 g of the resin is heated under reflux in 500 ml of substantially anhydrous methanol.

4,454,299

PREPARATION OF PROPYLENE/ETHYLENE BLOCK COPOLYMERS

Guenther Schweier, Friedelsheim; Wolfgang Gruber, Frankenthal; Werner Metzger, Hessheim, and Peter Hennenberger, Freinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 15, 1983, Ser. No. 485,445

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214246

Int. Cl.³ C08F *297/08*

U.S. Cl. 525—53 **1 Claim**

1. A process for the preparation of propylene/ethylene block copolymers, in which, in an agitated fixed bed comprising small polymer particles, in each case in the presence of hydrogen as a molecular weight regulator and in the absence of a liquid reaction medium, first

(I) propylene is homopolymerized, from the gas phase, in a first polymerization zone, by feeding in a Ziegler-Natta catalyst comprising

(1) a titanium(III) component and

(2) a dialkyl-aluminum chloride component, with or without

(3) a further catalyst component, and then

(II) The product obtained in the first polymerization zone is fed into a second polymerization zone, where a mixture of propylene and ethylene is polymerized with the propylene homopolymer present in the product from the first polymerization zone,

with the provisos that (i) the atomic ratio of titanium from the titanium(III) component (1) to aluminum from the dialkyl-aluminum chloride component (2) is from 1:2 to 1:15, and (ii) the weight ratio of propylene converted to polymer in the first polymerization zone to the propylene/ethylene mixture converted to polymer in the second polymerization zone is from 100:10 to 100:25, wherein

(a) in the first polymerization zone, the reaction is carried out under a total pressure of from 24 to 33 bar and at from 70° to 75° C., with the proviso that the ratio of the partial pressure of propylene to that of hydrogen (P/H-I) is from 100:0.5 to 100:10,

(b) in the second polymerization zone, the reaction is carried out under a total pressure of from 10 to 16 bar and at from 50° to 55° C., with the provisos that (i) the ratio of the partial pressure of propylene to that of ethylene is from 100:20 to 100:50, and (ii) the ratio of the partial pressure of propylene to that of hydrogen (P/H-II) is from 100:5 to 100:50,

(c) the total pressure in the first polymerization zone is kept not less than 10 bar higher than that in the second polymerization zone,

(d) the temperature in the second polymerization zone is kept not less than 15° C. lower than that in the first polymerization zone, and

(e) the relationship between the ratio partial pressure of propylene:partial pressure of hydrogen in the first polymerization zone (P/H-I) and the ratio partial pressure of propylene:partial pressure of hydrogen in the second polymerization zone (P/H-II) is set so that the ratio P/H-I:P/H-II is from 2 to 70.

4,454,300

BLENDS OF VINYL HALIDE-POLYOLEFIN GRAFT POLYMERS AND SMA POLYMERS

Gautam R. Ranade, Grand Island, and Gideon Salee, Williamsville, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,396

Int. Cl.³ C08L *51/04, 51/06, 35/06*

U.S. Cl. 525—71 **15 Claims**

1. A polymer composition comprising a vinyl halide hydrocarbon polyolefin graft polymer, and a copolymer of a mono-

vinyl aromatic compound and an anhydride of an ethylenically unsaturated dicarboxylic acid.

4,454,301

CROSSLINKING COATING COMPOSITIONS

Susan M. Cady, Yardley, Pa.; Werner J. Blank, Wilton, and Peter J. Schirmann, Fairfield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1982, Ser. No. 385,429

Int. Cl.³ C08F 8/12

U.S. Cl. 525—118 **9 Claims**

1. A crosslinkable coating composition comprising (1) a polymer containing repeating units derived from an alkyl acrylamidoglycolate alkyl ether or an acrylamidoglycoamide alkyl ether and (2) a source of hydroxy, carboxy, or amido groups selected from the class consisting of (a) other repeating units of said polymer containing such hydroxy, carboxy, or amido groups and (b) compounds other than said polymer containing at least two reactive functional groups selected from hydroxy, carboxy, and amido, said hydroxy, carboxy or amido groups being reactive with alkoxy ether functionality of said repeating units derived from said alkyl acrylamidoglycolate alkyl ether or said acrylamidoglycoamide alkyl ether upon heat curing to produce a crosslinked polymeric structure, said alkyl acrylamidoglycolate alkyl ether being derived from acrylamido- and methacrylamidoglycolic acid and containing an ester group selected from alkyls of 1–6 carbon atoms, cycloalkyls of 5–6 carbon atoms and 2-hydroxy alkyls of 2–6 carbon atoms and cycloalkyls of 5–6 carbon atoms, and said acrylamidoglycoamide alkyl ether being derived from acrylamido- or methacrylamido acid containing an amide group derived from a primary or secondary aliphatic or cycloaliphatic amine with C_1 to C_{20} carbon atoms optionally substituted with oxygen or nitrogen.

4,454,302

POLYESTER RESIN COMPOSITION

Yasuhiro Ohmura, Kawasaki; Seiichiro Maruyama, and Shigeru Shigemoto, both of Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 25, 1982, Ser. No. 411,273

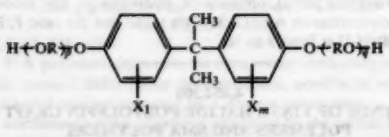
Claims priority, application Japan, Sep. 9, 1981, 56-142037

Int. Cl.³ C08L 67/02

U.S. Cl. 525—167 **10 Claims**

1. A polyester resin composition comprising:

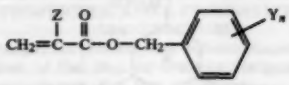
(a) 100 parts by weight of a copolymerized polyester resin (a) with a halogen content of 3 to 15% by weight prepared by copolymerizing terephthalic acid or an ester-forming derivative thereof; an alkylene glycol having 2 to 10 carbon atoms or an ester-forming derivative thereof; and a halogen-containing aromatic diol represented by the formula:



(I)

wherein R represents an alkylene of 2 to 4 carbon atoms, X represents a halogen atom, l and m each represents an integer of 1 to 4 and p and q each represents an integer of 1 to 10, and

(b) 0.1 to 10 parts by weight of an acrylic resin (b) with a halogen content of not less than 10% by weight prepared by polymerizing a benzyl acrylate or benzyl methacrylate represented by the formula:



(II)

wherein Y represents a halogen atom, n represents an integer of 1 to 5 and Z represents hydrogen or methyl.

4,454,303

COMPOSITION FOR DRAWN FILM

Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 213,461, Dec. 5, 1980, which is a division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Jan. 12, 1983, Ser. No. 457,365

Claims priority, application Japan, Oct. 11, 1977, 52-120917; Nov. 22, 1977, 52-139431; May 30, 1978, 53-63870; May 30, 1978, 53-63872

Int. Cl.³ C08L 23/12, 23/16, 23/08, 33/02

U.S. Cl. 525—211 **15 Claims**

1. A composition comprising a homogeneous blend of one of the specific combinations of components, namely the combination of (A)+(B)+(C); wherein

(A) is at least one selected from the group consisting of copolymers of ethylene with unsaturated aliphatic monocarboxylic acids and alkyl esters of said acids which are all copolymerizable with ethylene,

(B) is an elastomer having a density of not more than 0.91 g/cm³ and made of an ethylene-α-olefin copolymer, and

(C) is crystalline polypropylene and the ratios of the components are such as to satisfy $0.05 \leqq B/(A+B) \leqq 0.90$ and $0.05 \leqq C/(A+B) \leqq 2.0$.

4,454,304

METHOD AND MATERIAL FOR PRODUCING HIGH GREEN STRENGTH RUBBER COMPOUNDS

Tom C. H. Tsai, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corp., Baton Rouge, La.

Filed Apr. 22, 1981, Ser. No. 256,005

Int. Cl.³ C08L 45/00

U.S. Cl. 525—210 **12 Claims**

1. A method for producing a rubber compound having high green strength comprising

(a) forming a conjugated diolefin rubber polymer wherein a conjugated diolefin is polymerized with a tertiary amine copolymerizable with the diolefin;

(b) forming a conjugated diolefin rubber polymer wherein a conjugated diolefin is polymerized with a halogenated cross linking agent, said cross linking agent containing an unsaturated group polymerizable with the diolefin and being selected from the group consisting of a dihalobutene, a vinylbenzyl halide, and a 5-haloacetoxymethyl-2-norbornene; and,

(c) blending together the products of (a) and (b).

4,454,305

RUBBER DISPERSIONS II

Christian Lindner, Cologne; Lothar Liebig, and Karl-Heinz Ott, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 284,248, Jul. 17, 1981, abandoned, which is a continuation of Ser. No. 129,599, Mar. 12, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,712

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910168

Int. Cl.³ C08F 279/04

U.S. Cl. 525—310 **1 Claim**

1. A stable, free-flowing dispersion of rubber in an organic

liquid in the form of discrete particles having an average diameter of from 100 to 300 nm which contains:

(A) as rubber, from 1 to 20% by weight, based on the total dispersion, of a cross-linked rubber selected from the group consisting of homopolymers of conjugated dienes containing from 4 to 8 carbon atoms and copolymers thereof with up to 40% by weight of a polymerizable vinyl compound;

(B) from 0 to 20% by weight, based on total dispersion, of water in the form of water-in-oil emulsion, and

(C) as the continuous organic phase, from 99 to 66% by weight, based on the total dispersion, of

(a) a mixture of from 85 to 50% by weight of styrene or α-methyl styrene and from 15 to 50% by weight of acrylonitrile or methacrylonitrile or

(b) a mixture of from 85 to 50% by weight of C_1–C_{10} alkyl acrylate or alkyl methacrylate and from 15 to 50% by weight of acrylonitrile or methacrylonitrile and

up to 60% by weight of a liquid hydrocarbon added to and mixed with (a) or (b).

4,454,306

OLEFINIC BLOCK COPOLYMER AND CROSSLINKED PRODUCT THEREOF

Masaki Fujii, and Mitsutaka Miyabayashi, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,834

Claims priority, application Japan, Aug. 20, 1981, 56-130730; Dec. 15, 1981, 56-202059; Mar. 23, 1982, 57-45799; Apr. 27, 1982, 57-69629

Int. Cl.³ C08F *293/00*; C08L *53/00*

U.S. Cl. 525—323 **7 Claims**

1. A crosslinked product of an olefinic block copolymer, said crosslinked product being characterized by being derived from an olefinic block copolymer comprising 5 to 70 parts by weight of at least one block (A), which is selected from homopolymer blocks of propylene and random copolymer blocks of propylene and ethylene or a C_{4-12} α-olefin and has a propylene content of 60 to 100% by weight, and 30 to 95 parts by weight of at least one block (B), which is a random copolymer of ethylene and at least one C_{3-12} α-olefin and has an ethylene content of 10 to 85% by weight, and being characterized in that:

(1) the content therein of hot xylene insoluble components is from 5 to 75% by weight; and

(2) the fluidity thereof, which is, the quantity thereof flowing per second (cc/sec.$\times 10^{-3}$) out through the orifice of Koka flow tester, is 3 to 500 cc/sec.$\times 10^{-3}$ when measured by said flow tester having a cylinder diameter of 10 mm, an orifice diameter of 1 mm, and an orifice height of 2 mm and operated with a load of 30 Kg and a temperature of said crosslinked product of 200° C.

4,454,307

ELIMINATION PROCESS

Phillip Cheshire, Billinge, nr. Wigan, England, assignor to Imperial Chemical Industries Plc, London, England

Filed Sep. 9, 1983, Ser. No. 530,678

Claims priority, application United Kingdom, Oct. 4, 1982, 8228269

Int. Cl.³ C08G *61/00*

U.S. Cl. 525—379 **10 Claims**

1. A process for the preparation of a polymer having aromatic rings in the backbone thereof which process comprises treating a polymeric composition comprising a polymer which has cyclohex-2-enylene rings bearing carbonate groups at the 5,6 ring positions in the polymer backbone with a suitable organic amine such that the carbonate groups are eliminated from at least substantially all of the said cyclohexenylene rings.

4,454,308

RUBBERY POLYARYLATES

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 6, 1982, Ser. No. 447,092

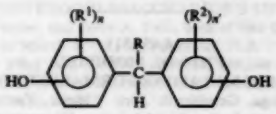
Int. Cl.³ C08G *63/18*

U.S. Cl. 525—444 **35 Claims**

1. Polyarylate compositions exhibiting rubbery and elastomeric properties and shape memory comprised of at least one polyarylate obtained by the reaction of:

(i) at least one aromatic dicarboxylic acid or a reactive derivative thereof; and

(ii) at least one dihydric phenol represented by the general formula



wherein:

R is selected from long straight chain alkyl radicals containing from about 15 to about 30 carbon atoms,

each R^1 is independently selected from halogen, monovalent hydrocarbon, and monovalent hydrocarbonoxy radicals, and

n and n' are independently selected from whole numbers having a value of from 0 to 4 inclusive.

4,454,309

POLYURETHANE POLYENE COMPOSITIONS

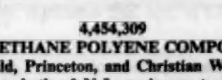
Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Continuation-in-part of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558. This application Oct. 8, 1982, Ser. No. 433,481

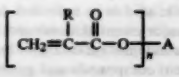
Int. Cl.³ C08G *18/32, 18/67, 71/04*; C08F *283/04*

U.S. Cl. 525—454 **13 Claims**

1. A hydrophilic polyurethane polyene composition comprising from about 10 to about 50 parts by weight of a polyene selected from the group consisting of polyallyl esters having the formula:



wherein n is a whole number larger than 1 and smaller than 4, and R is the residue of a polybasic acid; and polyacrylic esters having the formula:



wherein n is a whole number larger than 2 and smaller than 7, R is hydrogen or a methyl radical and A is the residue of a polyhydric alcohol; and about 100 parts by weight of a hydrophilic polyurethane resin.

4,454,310

POLYAMIDE ACID, PROCESS FOR PRODUCING SAME AND POLYIMIDE OBTAINED THEREFROM

Hiroshi Oka; Yoshinori Yoshida, both of Yokkaichi, and Yuuzi Naitou, Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 450,041
Claims priority, application Japan, Dec. 21, 1981, 56-205099; May 31, 1982, 57-91295
Int. Cl.³ C08G 73/10
U.S. Cl. 528—188 17 Claims

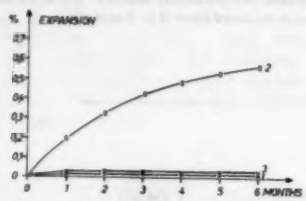
1. A polyamide acid that is the reaction product of 2,3,5-tricarboxycyclopentyl-acetic acid or its anhydride and a diamine, which has an absorption of a stretching vibration of a carbonyl group at 1,600–1,700 cm^{-1} due to an amide group in its infrared absorption spectrum.

4,454,311

PHENOL MODIFIED SULFAMATE-MELAMINE-FORMALDEHYDE RESIN

Theodor Bürge, Geroldswil; Jürg Widmer, Zurich; Theodor Meyer, Regensdorf, and Ulrich Sulser, Oberengstringen, all of Switzerland, assignors to Sika AG, vorm. Kaspar Winkler & Co., Zurich, Switzerland

Filed Sep. 30, 1982, Ser. No. 428,530
Claims priority, application Switzerland, Oct. 26, 1981, 6821/81
Int. Cl.³ C08G 12/32, 8/10
U.S. Cl. 528—245 6 Claims



1. Polycondensation product of
(a) sulfamic acid ($H_2N—SO_3N$ and/or at least one N-substituted organic derivative of the sulfamic acid as such or in the form of their salts,
(b) formaldehyde, glyoxal or formaldehyde and glyoxal,
(c) melamine, or melamine and at least one phenolic compound.

4,454,312

BIAXIALLY STRETCHED POLYESTER FILMS

Katsuaki Kuze; Hiroshi Hashimoto, both of Otsu; Takeshi Ohta, Tsuruga; Tsukasa Akaishi, Otsu; Kunio Takeuchi, Inuyama, and Hiroyoshi Kamatani, Otsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Dec. 10, 1982, Ser. No. 448,554
Claims priority, application Japan, Dec. 12, 1981, 56-200592
Int. Cl.³ C08G 63/04, 63/30
U.S. Cl. 528—275 20 Claims

1. A biaxially stretched polyester film comprising a polyester and zirconium as an internal particle material and having good slipping property and transparency, prepared by polycondensation of terephthalic acid or its esterified derivative and alkylene glycol as the major essential monomeric components in the presence of a polycondensation catalyst chosen from antimony compounds, titanium compounds and germanium compounds, during which zirconium in the form of any zirconium compound comprising zirconium as the sole metallic component in an amount of 80 to 2500 ppm in terms of zirconium to the polyester as produced being introduced into the reaction system at a stage after the initiation of the reaction and before the intrinsic viscosity of the reaction mixture reaching 0.2, and subjecting the produced polyester to film forming.

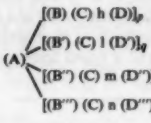
4,454,313

POLYESTER COMPOUND

Kiyoshi Okitsu, Otake, and Akira Yamamoto, Tokyo, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Sep. 30, 1983, Ser. No. 537,904
Claims priority, application Japan, Oct. 8, 1982, 57-177194
Int. Cl.³ C08G 63/16, 63/18
U.S. Cl. 528—302 2 Claims

1. A polyester compound represented by the general formula:



wherein:
(A) is a residue of an aromatic carboxylic acid having 1 to 4 carboxyl groups and 1 or 2 aromatic rings or a residue of an aliphatic carboxylic acid having 1 to 4 carboxyl groups and 4 to 37 carbon atoms,
(B), (B'), (B'') and (B''') may be the same or different and each is a residue of a saturated, straight-chain or branched aliphatic diol having 2 to 6 carbon atoms,
(C) is a residue of ω-hydroxycaproic acid and h, l, m and n are numbers larger than 0,
(D), (D'), (D'') and (D''') may be the same or different and each is a residue of an aromatic monocarboxylic acid having 1 or 2 aromatic rings, the respective residues being bonded with each other through an ester bond and selected so as to give the average molecular weight of 700 to 3,000 by properly adjusting the values of h, l, m and n, and p, q, r and s are each zero or one, the total of them being from one to four.

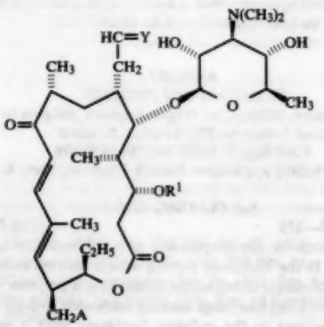
4,454,314

ANTIBACTERIAL MYCAMINOSYL TYLONOLIDE AND RELATED MACROLIDE DERIVATIVES

Arthur A. Nagel, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,024
Int. Cl.³ A61K 31/71; C07H 17/08
U.S. Cl. 536—7.1 78 Claims

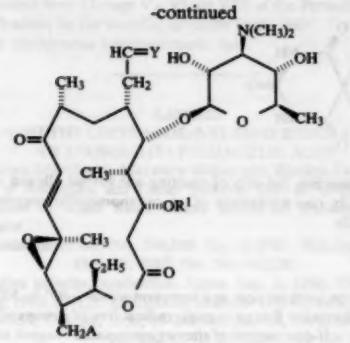
1. A compound having the formula



(I)

or

-continued



(II)

wherein

A is —XR, —OH, —NR^2R^3 or halo;

X is oxygen or NH;

Y is oxygen or NNR^4R^5;

R is $(C_2–C_6)$alkanoyl, $(C_8–C_{10})$phenylalkanoyl, benzoyl, or one of $(C_1–C_6)$alkanesulfonyl or benzenesulfonyl, said phenylalkanoyl, benzoyl or benzenesulfonyl groups mono or disubstituted on aromatic ring with $(C_1–C_3)$-alkyl, $(C_1–C_3)$alkoxy or halo;

R^1 is hydrogen or $(C_2–C_6)$alkanoyl;

R^2 and R^3 are each independently $(C_1–C_6)$alkyl, or taken together are $—(CH_2)_2O(CH_2)_2—$ or $—(CH_2)_n—$;

R^4 and R^5 are each independently H or $(C_1–C_6)$-alkyl, or taken together are $—(CH_2)_2O(CH_2)_2—$ or $—(CH_2)_n—$; and

n is an integer from 4 to 7;

with the proviso that when the compound has the formula (I) and A is OH, R^1 is other than H;

or a pharmaceutically acceptable acid addition salt thereof.

4,454,315

CARBOXYMETHYLATED DERIVATIVES OF β-1,3-GLUCAN

Takuma Sasaki, Tokyo, and Yukio Sugino, Toyonaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

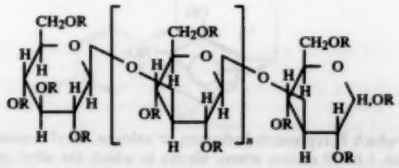
Continuation of Ser. No. 015,898, Feb. 28, 1979, abandoned, which is a continuation of Ser. No. 850,019, Nov. 9, 1977, abandoned. This application Jan. 14, 1981, Ser. No. 224,890

Claims priority, application Japan, Nov. 18, 1976, 51-139143

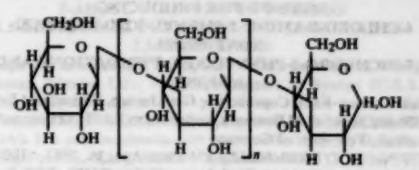
Int. Cl.³ A61K *31/715;* **C08B** *37/00*

U.S. Cl. 536—18.2 **6 Claims**

1. A carboxymethylated β-1,3-glucan of the formula:



wherein at least one of the R's is $—CH_2COOH$, with the remainder being H; n is an integer, and pharmaceutically acceptable salts thereof, which is produced by carboxymethylating β-1,3-glucan or its hydrolysate shown by the formula



wherein n is an integral number, and whose average degree of polymerization is between 2 and 1000.

4,454,316

HETEROPOLYSACCHARIDE S-139

George T. Veeder, and Jerry A. Peik, both of San Diego, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 15, 1982, Ser. No. 339,266

Int. Cl.³ C07H *1/00;* **C08B** *37/00;* **C12P** *19/06;* **C12N** *1/22*

U.S. Cl. 536—123 **3 Claims**

1. Heteropolysaccharide S-139, which comprises principally carbohydrate, about 17% protein and about 5% (calculated as O-acetyl) acyl groups as the glycosidically linked ester, the carbohydrate portion containing about 14% galacturonic acid (based on the wt. of gum) and the neutral sugars rhamnose, mannose, glucose and galactose in the approximate molar ratio of 2.5:1:1.5:1.

4,454,317

PROCESS FOR THE TRIMERIZATION OF DIISOCYANATES

Josef Disteldorf; Werner Hübel, and Elmar Wolf, all of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

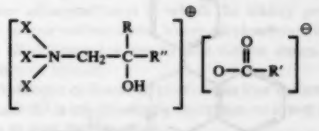
Continuation of Ser. No. 141,902, Apr. 21, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 400,992

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916201

Int. Cl.³ C07D *251/34*

U.S. Cl. 544—193 **9 Claims**

1. In a process for trimerization of diisocyanates in the presence of a catalyst comprising quaternary ammonium salts of organic acids having the formula:



wherein X represents the same or different radicals selected from the group consisting of $C_1–C_{20}$ alkyl, $C_3–C_8$ cycloalkyl, and $C_2–C_{20}$ aralkyl; two X radicals taken together with at least one other heteroatom forming a hetero-ring and three X radicals taken together with the quarternary nitrogen atoms forming a heteroring through a common heteroatom such that said heterocyclic ring structure is selected from the group consisting of triethylene diamine, methyl triethylene diamine, quinuclidine, N-methylmorpholine, N-ethylmorpholine and N,N'-dimethylpiperazine; R is alkyl, cycloalkyl or aralkyl, R'' is R or hydrogen; R+R'' together form a $C_1–C_{12}$ alkyl radical; R' is hydrogen, hydroxyl or a $C_1–C_{12}$ alkyl radical optionally containing a $CH_{(3-b)}Z_b$ group, wherein b=1 to 3 and Z is OH, the improvement comprising:

reacting said diisocyanate with said catalyst in an amount of 0.02–0.1% by weight calculated on the weight of the compound to be trimerized at a temperature ranging from 40°–120° C.

4,454,318

METHOD FOR PRODUCING 4-CHLORO-5-AMINO-2-PHENYL-3(2H)-PYRIDAZINONE FROM 4,5-DICHLORO-2-PHENYL-3(2H)-PYRIDAZIONE AND AMMONIA

Niels Clauson-Kaas, Copenhagen; Gert Jansen, Forum, and Erik Olsen, Koge, all of Denmark, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

PCT No. PCT/DK80/00062, 371 Date Apr. 16, 1981, 102(e) Date Apr. 16, 1981, PCT Pub. No. WO81/01288, PCT Pub. Date May 14, 1981

PCT Filed Oct. 17, 1980, Ser. No. 253,840

Claims priority, application Denmark, Oct. 31, 1979, 4613/79

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.[3] **C07D** *237/22, 237/14*

U.S. Cl. 544—241 **4 Claims**

1. A method for producing 4-chloro-5-amino-2-phenyl-3(2H)-pyridazinone from 4,5-dichloro-2-phenyl-3(2H)-pyridazinone and ammonia in high yield and substantially free from 4-amino-5-chloro-2-phenyl-3(2H)-pyridazinone with aqueous ammonia in the presence of a catalyst which is capable of selectively exchanging the 5-chlorine atom in 4,5-dichloro-2-phenyl-3(2H)-pyridazinone with a leaving group of such a nature that the resulting intermediate compound is capable of alkylating ammonia to 4-chloro-5-amino-2-phenyl-3(2H)-pyridazinone in high yield in the reaction medium, thereby regenerating the catalyst, said catalyst being selected from the group consisting of 4-hydroxyphenyl-acetic acid, 4-hydroxybenzoic acid, 3-hydroxy-2-pyridone, and 3-hydroxy-pyridine.

4,454,319

PYRIMIDO[6,1-A]ISOGUINOLINE-4-ONE DERIVATIVES

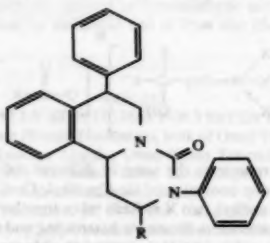
Bruce E. Maryanoff, New Hope, and Albert J. Molinari, Philadelphia, both of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Jun. 1, 1982, Ser. No. 383,422

Int. Cl.[3] **C07D** *471/04;* **A61K** *31/505*

U.S. Cl. 544—252 **2 Claims**

1. A compound of the formula



wherein R is ethyl, n-propyl or 2-haloethyl, wherein the halo=Cl, Br, or I.

4,454,320

PROCESS FOR 5-SUBSTITUTED DIALURIC ACIDS

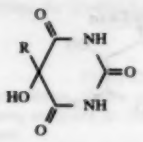
Faustas J. Rajeckas, Waterford, and Gerald F. Holland, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,499

Int. Cl.[3] **C07D** *239/60*

U.S. Cl. 544—300 **22 Claims**

1. A process for preparing a compound of the formula



which comprises the step of reacting anhydrous alloxan with substantially one equivalent of an organometallic reagent of the formula

RM

in a reaction inert solvent at a temperature of −90° to 50° C., in which formulae R is an organic radical free of groups which will cause self-destruction of the organometallic reagent at the particular temperature of the reaction and M is Li or MgX, wherein X is Cl, Br or I.

4,454,321

PREPARATION OF AMINES FROM OLEFINS USING CETAIN TRANSITION METAL CATALYSTS

David M. Gardner, Collegeville, and Roger T. Clark, Pottstown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 143,985, Apr. 28, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,625

Int. Cl.[3] **C07C** *85/02;* **C07D** *211/00*

U.S. Cl. 546—184 **9 Claims**

1. A process for the production of aliphatic and aromatic amines which comprises reacting in a liquid phase an olefin having from 2 to 18 carbon atoms with either ammonia, a lower primary amine or a lower secondary amine in the presence of a catalyst at a temperature of 100° C. to 250° C., and at a pressure of at least autogenous and up to 12,000 psig whereby an N—H bond is added across the double bond of the olefin, said catalyst being selected from the class consisting of an iron salt and a coordination compound of iron.

4,454,322

PROCESS FOR THE PREPARATION OF 2-BENZOXAZOLONE AND DERIVATIVES FROM ORTHO-NITROPHENOLS AND CARBON MONOXIDE

Jacques Kervennal, Lyons; Jean-Marie Cognion, Saint Genis Laval, and Pierre Durual, Vernaison, all of France, assignors to Atochem, Paris, France

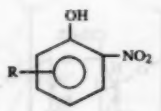
Filed Jan. 24, 1983, Ser. No. 460,431

Claims priority, application France, Feb. 23, 1982, 82 02921

Int. Cl.[3] **C07D** *498/00, 263/54*

U.S. Cl. 548—221 **17 Claims**

1. A process for the preparation of 2-benzoxazolone and derivatives thereof which comprises reacting, in the liquid phase, at a temperature from 100° to 500° C. and a pressure of 20 to 500 bars, an ortho-nitrophenol of the formula:



in which R represents hydrogen or halogen, alkyl containing from 1 to 10 carbon atoms, alkoxy in which the alkyl group contains from 1 to 10 carbon atoms, and carbon monoxide under pressure, the process being carried out in the presence of:

a. a supported catalyst formed by the association of a noble metal of Group VIII and a second transition metal se-

lected from Groups V_b, VI_b or VIII of the Periodic Classification, in the metallic or oxide form; and

b. a nitrogenous heteroaromatic base.

4,454,323

1-METHYLTETRAZOL-5-YLTHIO ESTER OF CYANOMETHYLTHIOACETIC ACID

Masahiro Murakami; Masateru Kobayashi; Kimiyo Yamamoto, all of Nobeoaka, and Chisei Shibuya, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

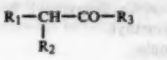
Continuation of Ser. No. 298,884, Sep. 2, 1981. This application Oct. 25, 1983, Ser. No. 545,202

Claims priority, application Japan, Sep. 2, 1980, 55-120619; Sep. 4, 1980, 55-121718; Oct. 13, 1980, 55-142048; Oct. 22, 1980, 55-146859; Oct. 24, 1980, 55-148178; Jul. 14, 1981, 56-108797

Int. Cl.³ C07D *257/04*

U.S. Cl. 548—251 **1 Claim**

1. A thioester compound represented by the following general formula (I):



wherein R_1 represents a cyanomethylthio group, wherein R_2 represents a hydrogen atom and wherein R_3 represents a 1-methyl-1,2,3,4-tetrazol-5-ylthio group.

4,454,324

PROCESS FOR PRODUCTION OF ENCAINIDE

Gary D. Madding, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 330,298, Dec. 14, 1981, Pat. No. 4,394,507. This application Apr. 1, 1983, Ser. No. 481,218

Int. Cl.³ C07D *213/50*

U.S. Cl. 546—337 **3 Claims**

1. The compound, 2-(2-pyridylacetyl)-p-anisanilide and its acid addition salts.

4,454,325

N-(ALKENYL)-2-AZA-2'-HYDROXY-5,6-BENZOTRICYCLO[6.3.0^{1,8}.0^{4,11}] UNDECANES

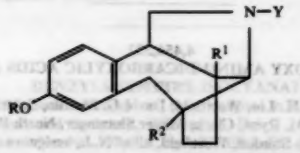
Patrice C. Belanger, Dollard des Ormeaux, and Robert N. Young, Senneville, both of Canada, assignor to Merck Sharp & Dohme I.A. Corp., Rahway, N.J.

Division of Ser. No. 228,482, Jan. 26, 1981, Pat. No. 4,376,779. This application Dec. 27, 1982, Ser. No. 453,662

Int. Cl.³ C07D *209/94*

U.S. Cl. 548—425 **4 Claims**

1. A compound of the formula



(I)

where

R is hydrogen or methyl;

R^1 and R^2 are each independently hydrogen or C_{1-4}alkyl providing that they cannot be simultaneously both t-butyl; and

Y is C_{3-4}alkenyl

or a pharmaceutically acceptable acid addition salt thereof.

4,454,326

5-AROYL 6-CHLORO OR 6-BROMO 1,2-DIHYDRO-3H-PYRROLO[1,2-a]PYRROLE-1,1-DICARBOXYLATES

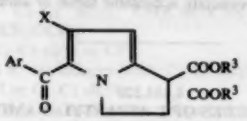
Joseph M. Muchowski, Sunnyvale, Calif., and Robert Greenhouse, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 272,818, Jun. 11, 1981, Pat. No. 4,347,186, which is a continuation-in-part of Ser. No. 198,552, Oct. 20, 1980, Pat. No. 4,347,186. This application Jun. 11, 1982, Ser. No. 387,563

Int. Cl.³ C07D *471/04*

U.S. Cl. 548—453 **2 Claims**

1. A compound of the formula



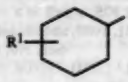
(II)

wherein:

X is chloro or bromo; Ar is a moiety selected from the group consisting of

(IA),

(IB),



(IC) and

(ID)

in which:

Y is oxygen or sulfur;

R is hydrogen, methyl, chloro, or bromo;

R^1 is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxyl of one to four carbon atoms, carboxyl, lower alkoxycarbonyl in which the alkoxy group has one to four carbon atoms, lower alkylcarbonyl in which the alkyl group has one to four carbon atoms, fluoro, chloro or bromo;

R^2 is hydrogen or lower alkyl of one to four carbon atoms; and each R^3 is independently hydrogen or lower alkyl of one to four carbon atoms.

4,454,327

5-OXO-2,2-PYRROLIDINEDIPROPANOIC ACID AND ESTER DERIVATIVES THEREOF

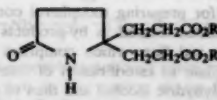
Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 24, 1982, Ser. No. 381,483

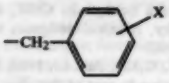
Int. Cl.³ C07D *207/273*; A61K *31/40*

U.S. Cl. 548—551 **8 Claims**

1. A compound having the structural formula



wherein R and R′ are the same or different and are hydrogen;



wherein X is hydrogen, alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, halo or trifluoromethyl; alkyl having from one to six carbon atoms;
or a pharmaceutically acceptable metal or amine cation;
provided that R and R′ may not both be hydrogen, ethyl, or different pharmaceutically acceptable metal or amine cations.

4,454,328

BRANCHED AMIDES OF L-ASPARTYL-D-AMINO ACID DIPEPTIDES

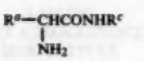
Thomas M. Brennan, Old Lyme, and Michael E. Hendrick, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 276,243, Jun. 26, 1981, Pat. No. 4,399,163, which is a continuation-in-part of Ser. No. 201,745, Nov. 5, 1980, Pat. No. 4,411,925, which is a continuation-in-part of Ser. No. 113,800, Jan. 21, 1980, abandoned. This application Apr. 1, 1983, Ser. No. 481,495

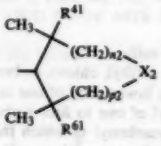
Int. Cl.³ C07D *331/04, 333/36, 333/48, 335/02*

U.S. Cl. 549—28 **14 Claims**

1. A D-amino acid amide compound of the formula



wherein R^a is CH_2OH or CH_2OCH_3, and R^c is



where X_2 is S or SO_2 and

a. when n_2 is zero and p_2 is zero or 1, R^{41} and R^{61} are each methyl,

b. when n_2 is 1 and p_2 is 1, R^{41} and R^{61} are each hydrogen.

4,454,329

PROCESS FOR PREPARATION OF TOCOPHEROL CONCENTRATES

Yoshiaki Takagi, and Yoshinori Kai, both of Kanagawa, Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,650

Claims priority, application Japan, Jul. 4, 1980, 55-90676; Mar. 17, 1981, 56-37310

Int. Cl.³ C07D *311/72*

U.S. Cl. 549—413 **2 Claims**

1. A process for preparing tocopherol concentrates from deodorized distillates formed as by-products at the step of deodorizing oils and fats, which comprises subjecting the deodorized distillate to esterification of free fatty acids by addition of a polyhydric alcohol and then to distillation, and collecting the distillate.

4,454,330

TWO-FUNCTIONAL-GROUP-CONTAINING TERPENOIDS, PROCESSES FOR THE PREPARATION OF THE SAME, AND ANTI-ULCER AGENTS CONTAINING THE SAME

Akio Sato; Kenji Nakajima, both of Ibaragi; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Noriaki Kuwana, Aichi; Shinya Abe, Kawagoe, and Kouzi Yamada, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and General Director of the Agency of Industrial Science and Technology, both of Tokyo, Japan

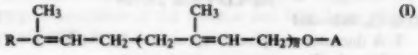
Division of Ser. No. 221,163, Dec. 29, 1980, Pat. No. 4,338,251. This application Mar. 22, 1982, Ser. No. 360,720

Claims priority, application Japan, Jan. 12, 1980, 55-2395

Int. Cl.³ C07D *309/06;* **C09F** *5/00*

U.S. Cl. 549—420 **11 Claims**

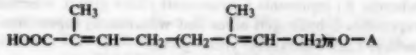
1. A compound having the formula (I):



(I)

in which n in an integer of form 2 to 5, R is hydroxymethyl, formyl or carboxyl, and A is 2-tetrahydropyranyl, benzyl, methoxymethyl or methoxyethoxymethyl.

2. A compound having the formula:



in which n is an integer of from 1 to 5, and A is 2-tetrahydropyranyl, benzyl, methoxymethyl or methoxyethoxymethyl.

4,454,331

PROCESS FOR PREPARING TETRAFLUOROETHYLOXYALKYL SILANES

Norbert Zeller; Rudolf Riedle, both of Burghausen; Tassilo Lindner, Mehring-Oed, all of Fed. Rep. of Germany, and Wolfgang Wagner, Tokyo, Japan, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,785

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138236

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—448 **5 Claims**

1. A process for preparing tetrafluoroethyloxyalkyl silanes which comprises reacting a silane having an Si-bonded hydrogen with a tetrafluoroethyloxy compound having an aliphatic multiple bond in a liquid phase, in which the reaction mixture is recycled at a rate of at least 10 meters per minute and the silane having Si-bonded hydrogen is present in an amount of from 10 to 25 mole percent in excess of the tetrafluoroethyloxy compound present in the reaction mixture.

4,454,332

HYDROXY AMINO DICARBOXYLIC ACIDS AND ESTERS

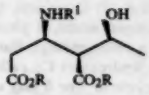
Thomas M. H. Liu, Westfield; David G. Melillo, Scotch Plains; Kenneth M. Ryan, Clark; Meyer Sletzinger, North Plainfield, and Ichiro Shinkai, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 255,193, Apr. 17, 1981, Pat. No. 4,344,885, which is a continuation of Ser. No. 112,058, Jan. 14, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 385,369

Int. Cl.³ C07C *101/30*

U.S. Cl. 560—039 **6 Claims**

1. A compound having the structure:



wherein R^1 is a removable N-protecting group selected from phenylalkyl having 7–12 carbon atoms, 2,4-dimethoxybenzyl, alkyl having 1–6 carbon atoms and α-methylbenzyl and R is a removable carboxy protecting group selected from alkyl having 1–6 carbon atoms, phenyl and phenylalkyl having 7–12 carbon atoms.

4. A compound having the structure:

wherein R is H or a removable carboxy protecting group selected from alkyl having 1–6 carbon atoms, phenyl and phenylalkyl having 7–12 carbon atoms.

4,454,333

PALLADIUM CATALYZED CARBONYLATION OF CONJUGATED DIENES WITH CATALYST RECYCLE

Jean Jenck, Villeurbanne, France, assignor to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Jul. 23, 1982, Ser. No. 401,338

Claims priority, application France, Sep. 16, 1981, 81 17464

Int. Cl.³ C07C *67/38*

U.S. Cl. 560—1 **25 Claims**

1. A process for the preparation of an ester of a β,γ-unsaturated carboxylic acid, comprising (i) carbonylating a conjugated diene with carbon monoxide in the presence of an alcohol, a halogenated hydracid and a palladium catalyst; (ii) distilling the carbonylation reaction product in the presence of an ammonium, phosphonium or arsonium quaternary onium chloride or bromide having a melting point below the temperature at which the carbonylation reaction is carried out, and at a temperature and pressure such that said reaction product separates into a gaseous phase and a homogeneous liquid phase; (iii) recovering said gaseous phase comprising the ester of the β,γ-unsaturated carboxylic acid corresponding to the reactant diene and alcohol, an unreacted diene and alcohol, and any volatile reaction products of low molecular weight; (iv) recovering said homogeneous liquid phase comprising a mixture of the quaternary onium chloride or bromide and the palladium catalyst, and any non-volatile reaction products of high molecular weight; and (v) recycling the homogeneous liquid phase comprising said mixture of quaternary onium chloride or bromide and the palladium cadalyst, into carbonylation reaction medium.

4,454,334

BENZYLSULFONYL ISOCYANATES

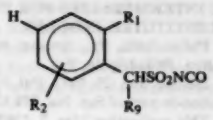
Richard F. Sauers, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 370,138, Apr. 22, 1982, Pat. No. 4,420,325, which is a continuation-in-part of Ser. No. 306,212, Sep. 29, 1981, abandoned, which is a continuation-in-part of Ser. No. 203,638, Nov. 3, 1980, abandoned. This application Sep. 21, 1983, Ser. No. 534,155

Int. Cl.³ C07C *143/828*

U.S. Cl. 560—12 **1 Claim**

1. A compound selected from:



(II)

wherein

R_1 is F, Cl, Br, CF_3, C_1–C_3 alkoxy, C_1–C_3 alkyl, NO_2, CO_2R_4, SO_2R_5, $SO_2NR_6R_7$, $SO_2N(OCH_3)CH_3$, $SO_2OCH_2CF_3$, OSO_2R_5 or CH_2L;

L is $SO_2NR_6R_7$, OCH_3, OC_2H_5, CO_2CH_3 or $CO_2C_2H_5$;

R_2 is H, Cl, Br, F, CF_3 or OCH_3;

R_4 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl, or $CH_2CH_2OCH_3$;

R_5 is C_1–C_3 alkyl or CF_3;

R_6 and R_7 are independently C_1–C_3 alkyl; and

R_9 is H or C_1–C_3 alkyl;

provided that the total number of carbon atoms of R_6 and R_7 is less than or equal to 4.

4,454,335

SUBSTITUTED BENZENE SULFONYL ISOCYANATES AS INTERMEDIATES TO HERBICIDAL SULFONAMIDES

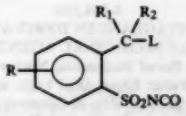
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 254,256, Apr. 29, 1981, Pat. No. 4,348,219, which is a continuation-in-part of Ser. No. 168,348, Jul. 11, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 378,397

Int. Cl.³ C07C *143/828*

U.S. Cl. 560—12 **1 Claim**

1. A compound selected from:



wherein

L is CO_2R_{10};

R is H, F, Cl, Br, NO_2, CF_3, C_1–C_3 alkyl or C_1–C_3 alkoxy;

R_1 is H or C_1–C_4 alkyl;

R_2 is H or CH_3;

R_{10} is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl or $CH_2CH_2OCH_3$.

4,454,336

DERIVATIVES OF 3-(FORMYLMETHYLTHIO)-PROPANOATE

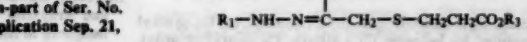
William V. Curran, Pearl River; Martin L. Sassiver, Monsey, both of N.Y., and James H. Boothe, Montvale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 27, 1982, Ser. No. 424,825

Int. Cl.³ C07C *147/06, 149/20, 149/437*; C07D *285/06*

U.S. Cl. 560—13 **1 Claim**

1. A compound having the following formula:



wherein R_1 is para-toluenesulfonyl, carbamoyl or carboalkoxy having from two to four carbon atoms, R_2 is hydrogen or methyl and R_3 is C_1–C_3 alkyl.

4,454,337

SEMICARBAZIDE INTERMEDIATES FOR PREPARING 4-SUBSTITUTED INDOLES

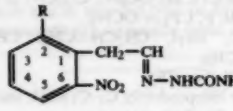
Lawrence I. Kruse, Philadelphia, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 278,016, Jun. 29, 1981, Pat. No. 4,394,514, which is a continuation-in-part of Ser. No. 259,123, Apr. 30, 1981, abandoned. This application Mar. 2, 1983, Ser. No. 471,572

Int. Cl.³ C07C *79/46, 79/35, 79/00*

U.S. Cl. 560—22 **4 Claims**

1. A compound of the formula:



in which R is C_{1-6} alkoxy, C_{1-6}-alkyl, benzyloxy or C_{2-7}-carbalkoxy.

4,454,338

AMIDINE COMPOUND

Setsuro Fujii, Toyonaka; Toshiyuki Okutome, Tokyo; Toyoo Nakayama; Takashi Yaegashi, both of Funabashi, and Masateru Kurumi, Narita, all of Japan, assignors to Torii & Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,534

Claims priority, application Japan, Sep. 16, 1980, 55-128269; Apr. 28, 1981, 56-64942

Int. Cl.³ C07C *101/00, 101/48*

U.S. Cl. 560—34 **1 Claim**

1. 6-Amidino-2-naphthyl 4-guanidinobenzoate and a pharmaceutically acceptable acid addition salt thereof.

4,454,339

9-FLUOROPROSTAGLANDIN DERIVATIVES, AND USE AS MEDICINAL AGENTS

Werner Skuballa; Bernd Radüchel; Norbert Schwarz; Helmut Vorbrueggen; Walter Elger; Olaf Loge, and Michael-Harold Town, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

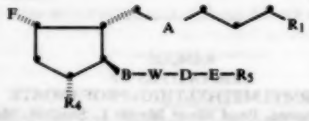
Filed Jul. 6, 1982, Ser. No. 395,448

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126924

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—55 **27 Claims**

1. A 9-Fluoroprostane derivative of the formula



wherein

R_1 is CH_2OH or

wherein R_2 is (a) hydrogen, (b) C_{1-10} alkyl, (c) C_{1-10} alkyl substituted by halogen; C_{1-4} alkoxy; C_{6-10}-aryl or aroyl; C_{6-10}-aryl or aroyl each substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; di-C_{1-4}-alkylamino; or tri-C_{1-4}-alkylammonium; (d) C_{3-10} cycloalkyl, (e) C_{3-10} cycloalkyl substituted by C_{1-4} alkyl, (f) C_{6-10} aryl, (g) C_{6-10} aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group, or (h) an aromatic heterocycle of 5 or 6 ring atoms, one or two of which are O, N or S, the remainder being carbon atoms;

or R_1 is

wherein R_3 is an acyl group of a hydrocarbon C_{1-5} carboxylic or sulfonic acid or is one of the R_2 groups;

A is $—CH_2—CH_2—$ or cis—CH=CH—;

B is $—CH_2—CH_2—$, trans—CH=CH— or C≡C—;

W is hydroxymethylene or RO-methylene, wherein the OR or OH group is in a α- or β-position;

R is tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-5}-hydrocarbon carboxylic or sulfonic acid.

D and E jointly are a direct bond or

D is straight-chain or branched alkylene or alkenylene of 1–10 carbon atoms, optionally substituted by 1–2 fluorine atoms and E is oxygen, sulfur, a direct bond, C≡C— or $—CR_6=CR_7—$ wherein R_6 and R_7 differ from each other and each is hydrogen, chlorine or C_{1-6}-alkyl;

R_4 is OH or OR;

R_5 is (a) a C_{6-10} hydrocarbon aliphatic radical substituted by C_{6-10}-aryl or by C_{6-10}-aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, caboxy, hydroxy or C_{1-4} alkoxy group; (b) C_{3-10} cycloalkyl, (c) C_{3-10} cycloalkyl substituted by C_{1-4} alkyl; (d) C_{6-10} aryl, (e) C_{6-10} aryl substituted by 1–3 halogen atoms, a phenyl group, 1–3 C_{1-4} alkyl groups or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, hydroxy or C_{1-4} alkoxy group; or (f) an aromatic heterocycle of 5 or 6 ring atoms, one or two of which are O, N or S, the remainder being carbon atoms;

or when R_2 is hydrogen, a physiologically compatible salt thereof with a base.

4,454,340

PREPARATION OF ARYL 1-HYDROXYARYL-2-CARBOXYLATES

Stephen N. Falling, and Alan K. Wilson, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1983, Ser. No. 499,607

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—56 **3 Claims**

1. Process for the preparation of aryl 1-hydroxy-2-naphthoates which comprises reacting a 1-naphthol with an aryl chloroformate in the presence of aluminum chloride and an organic solvent.

4,454,341

NAPHTHYL OR TETRAHYDRONAPHTHYL-SUBSTITUTED NAPHTHOIC ACID AND DERIVATIVES

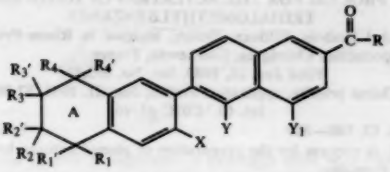
Marcia I. Dawson, Los Altos; Peter D. Hobbs, Redwood City, and Krzysztof A. Derdzinski, Mountain View, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Mar. 3, 1983, Ser. No. 471,744

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—100 **44 Claims**

1. A compound of the formula:



wherein ring A is a saturated ring and R_1, R_1', R_4, and R_4' are methyl and R_2, R_2', R_3 and R_3' are hydrogen or an aromatic ring and $R_3=R_3'$=methyl, $R_4=R_4'$=methyl, $R_2=R_2'$=methyl or hydrogen, and $R_1=R_1'$=methyl or hydrogen, and X is methyl, methoxy, chlorine or hydrogen, Y and Y_1 are fluorine or hydrogen, R is hydroxy, alkoxy with 0 or 1 hydroxy substituent, aroxy, or NR^1R^2 where R^1 is hydrogen, alkyl with 0 or 1 hydroxy substituent or aryl and R^2 is alkyl with 0 or 1 hydroxy or aryl with the provisos that when ring A is unsaturated and $R_1=R_1'$=hydrogen $R_2=R_2'$=hydrogen, when ring A is unsaturated and $R_2=R_2'$=hydrogen $R_1=R_1'$=hydrogen and that when Y or Y_1 is fluorine the other Y or Y_1 is hydrogen.

4,454,342

PREPARATION OF DIALKYL OXALATES USING A HETEROGENEOUS PD-V-P CATALYST FOR THE OXIDATIVE CARBONYLATION OF ALCOHOLS

Anne M. Gaffney, and John A. Sofranko, West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 13, 1982, Ser. No. 397,752

Int. Cl.³ C07C *67/36*

U.S. Cl. 560—204 **15 Claims**

1. A process for the preparation of dialkyl oxalates by the oxidative carbonylation of a liquid saturated monohydric aliphatic or alicyclic alcohol containing from 1 to 20 carbon atoms with a mixture of carbon monoxide and oxygen or an oxygen containing gas at a temperature of from about 40° C. to 150° C. and a total pressure of between about 500 psig and 6000 psig in the presence of a catalytic amount of an essentially insoluble heterogeneous tri-metallic-containing catalyst comprising palladium or a salt thereof in combination with a single phase crystalline vanadium-phosphorus containing compound consisting of a vanadium oxide and an oxide of phosphorus said catalyst containing as the metals an atomic ratio of palladium to vanadium to phosphorus of from about 0.01:1:0.5 to about 0.2:1:3 and recovering the desired dialkyl oxalate.

4,454,343

INTERMEDIATES IN A PROCESS FOR PREPARING DIHALOVINYLCYCLOPROPANECARBOXYLATES

Kiyoshi Kondo, and Kiyohide Matsui, both of Kanagawa, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

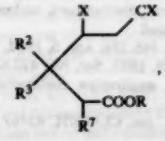
Division of Ser. No. 606,807, Aug. 22, 1975. This application Dec. 3, 1982, Ser. No. 446,521

Claims priority, application Japan, Sep. 10, 1974, 49-103520; Sep. 10, 1974, 49-103521

Int. Cl.³ C07C *69/63*

U.S. Cl. 560—226 **8 Claims**

1. A compound of the formula



wherein

(a) R is selected from the group consisting of lower alkyl, benzyl or 3-phenoxybenzyl.
(b) R^2 is a methyl group,
(c) R^3 is a methyl group,
(d) R^7 is a hydrogen atom or a lower alkyl group, and
(e) each X is independently selected from chlorine and bromine.

4,454,344

METHOD FOR THE RESOLUTION OF RACEMIC 2-(p-DIFLUOROMETHOXYPHENYL)-3-METHYLBUTYRIC ACID

Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 23, 1982, Ser. No. 410,805

Int. Cl.³ C07B *19/00*

U.S. Cl. 562—401 **5 Claims**

1. A method for the isolation of dextrorotatory 2-(p-difluoromethoxyphenyl)-3-methylbutyric acid comprising: admixing one molar equivalent of racemic 2-(p-difluoromethoxyphenyl)-3-methylbutyric acid in the presence of a mixture of water and a water immiscible solvent having a range of ratios of from 40/60 to 60/40 weight, with an optically active amine used in amounts sufficient to form a salt with the dextrorotatory component of said racemic acid, and an inorganic water soluble base used in amounts sufficient to total the sum of said base and of the above amine to at least 100 mol percent; heating the thus obtained mixture at a temperature range of from 40° C. to that of the boiling point of said mixture for a period of time sufficient to form the optically active amine salt of said dextrorotatory acid, isolating said salt from the rest of the reaction mixture and decomposing same with a mineral acid used in amounts sufficient to regenerate said dextrorotatory acid therefrom.

4,454,345

PROCESS FOR PREPARING 2,5-DICHLORO-3-NITROBENZOIC ACID

Albert M. V. Jacques, Philadelphia, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 27, 1979, Ser. No. 79,645

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—410 **7 Claims**

1. A method of preparing 2,5-dichloro-3-nitrobenzoic acid which comprises reacting 1,4-dimethyl-2,5-dichloro-3-nitrobenzene with aqueous nitric acid at a reaction temperature of at least about 150° C.

4,454,346

PROCESS FOR PRODUCING METHACRYLIC ACID

Sargis Khoobiar, Kinnelon, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Division of Ser. No. 973,354, Dec. 26, 1978, Pat. No. 4,374,757. This application Mar. 27, 1981, Ser. No. 248,630

Int. Cl.³ C07C *51/25, 57/055*

U.S. Cl. 562—535 **1 Claim**

1. A process for the preparation of methacrylic acid which comprises oxidizing methacrolein in the vapor phase with molecular oxygen in the presence of a catalyst composition consisting essentially of $Mo_aCu_bP_cSb_dCs_eO_f$ where: a=12; b=0.05–3; c=0.1–5; d=0.01–3; e=0.1–3; and f=value determined by the valence and proportions of the other elements of the formula.

4,454,347

PROCESS FOR PURIFICATION AND ISOLATION OF DIAMINOPHENYLINDANE

Marc E. Parham, Sharon, Mass.; Stephen A. Spearman, West Warwick, R.I., and Gleason O. Cookson, Taunton, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 11, 1983, Ser. No. 465,744
Int. Cl.[3] C07C *85/26*
U.S. Cl. 564—428 3 Claims

1. A process for preparing 5(6)-amino-1-(4-aminophenyl)-1,3,3-trimethylindane in a purified, crystalline form which comprises

(a) mixing a solution of toluene or xylene and 5(6)-amino-1-(4-aminophenyl)-1,3,3-trimethylindane with an aqueous solution of a lower alkane monocarboxylic acid at room temperature, to extract polyamino impurities,

(b) treating the toluene or xylene layer from step (a) with an acidic clay at room temperature to complete the removal of polyamino impurities by absorption thereon,

(c) concentrating the toluene or xylene layer from step (b) to about a 50% by weight solution of 5(6)-amino-1-(4-aminophenyl)-1,3,3-trimethylindane by heating to a temperature between 60° and 80° C. under a pressure of 100 to 200 mm Hg to remove excess toluene or xylene,

(d) slowly cooling the solution from step (c) with continual agitation first to room temperature, then, following an extended hold of 8 to 15 hours at room temperature, with continued slow cooling to a temperature between 0° and 5° C. to initiate crystallization of the product, and finally,

(e) charging at 0° to 5° C. to the crystallizing mass from step (d) an alkane of 5 to 8 carbon atoms or a mixture of such alkanes in a weight equal to that of the toluene or xylene present to facilitate crystallization of the desired product which is then isolated.

4,454,348

MANUFACTURE OF DIPHENYLAMINE

John E. Aiken, Allegheny County; Marvin C. Fields, Allegheny County, and Robert M. Stickel, Municipality of Murrysville, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1982, Ser. No. 434,096
Int. Cl.[3] C07C *85/18, 85/20*
U.S. Cl. 564—435 6 Claims

1. Method of making diphenylamine comprising reacting aniline in the vapor phase to make diphenylamine and ammonia in the presence of a low-sodium activated alumina catalyst which contains a maximum of 20% silica and no more than 0.2% sodium at temperatures between about 340° C. and 380° C. and pressures between about 15 to about 200 psig.

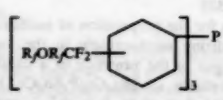
4,454,349

PERFLUOROALKYLETHER SUBSTITUTED PHENYL PHOSPHINES

Christ Tamborski, Dayton; Carl E. Snyder, Jr., Trotwood, and John B. Christian, Yellow Springs, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1982, Ser. No. 418,115
Int. Cl.[3] C07F *9/52, 9/50*
U.S. Cl. 568—13 7 Claims

1. A perfluoroalkylether-substituted aryl phosphine of the general formula



wherein R_fOR_f— is a perfluoroalkylether group containing at least one ether linkage.

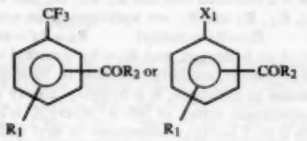
4,454,350

PROCESS FOR THE ACYLATION OF HALO- OR TRIHALOMETHYLBENZENES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialities Chimiques, Courbevoie, France

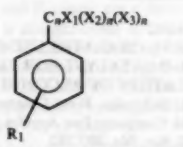
Filed Jun. 28, 1982, Ser. No. 392,883
Claims priority, application France, Jan. 21, 1982, 82 00877
Int. Cl.[3] C07C *45/46*
U.S. Cl. 568—319 7 Claims

1. A process for the preparation of phenyl ketones having the formulas:



(Ia) (Ib)

said process comprising acylation of halobenzene or trihalomethylbenzene having the formula:



(II)

in a reaction vessel with a carboxylic acid, a derivative, or a precursor thereof having the formula:

$$R_2COX_4 \quad \text{(III)}$$

in the presence of boron trifluoride in an amount such that the absolute pressure of the boron trifluoride within the reaction vessel exceeds 1 bar, and in the presence of hydrofluoric acid as a solvent; wherein

X_1, X_2, and X_3 are identical or different and represent Cl, Br, I, or F;

X_4 represents halogen, a group derived from the anion of an inorganic acid, OH, OR_3, $OCOR_4$, NH_2, NHR_5, or NR_6R_7, wherein each of R_3, R_4, R_5, R_6, and R_7 is an aromatic or aliphatic radical;

n is zero or one;

R_1 represents at least one element or moiety selected from hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than the $C_6X_1(X_2)_n(X_3)_n$ group; and

R_2 represents an aliphatic or aromatic radical.

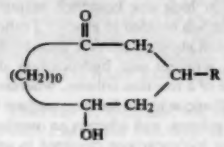
4,454,351

LACTONIC DERIVATIVES AND USE OF SAME AS STARTING MATERIALS FOR THE PREPARATION OF MACROCYCLIC HYDROXYKETONES

Charles Fehr, Versoix, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

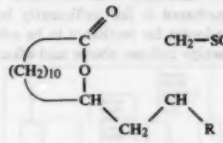
Division of Ser. No. 365,336, Apr. 5, 1982. This application Sep. 30, 1982, Ser. No. 428,680
Claims priority, application Switzerland, Apr. 21, 1981, 2593/81
Int. Cl.[3] C07C *45/61*
U.S. Cl. 568—347 3 Claims

1. Process for preparing a compound of the formula:



(I)

wherein symbol R represents a hydrogen atom or a methyl radical, which comprises treating a compound of the formula:



(II)

wherein symbol R represents a hydrogen atom or a methyl radical and Q represents a lower alkyl, phenyl or p-tolyl radical, with a strong base and subsequently reducing the resulting product.

4,454,352

PURE ENANTIOMERS OF BICYCLO[2.2.2]OCT-5-EN-2-ONES, PROCESSES FOR THEIR PRODUCTION AND THEIR USE

Martin Demuth, and Kurt Schaffner, both of Mülheim, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

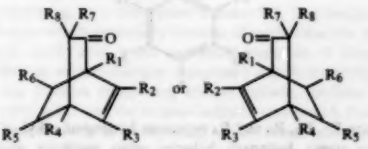
Division of Ser. No. 326,644, Dec. 2, 1981. This application Jul. 26, 1982, Ser. No. 401,479

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046106

Int. Cl.³ C07C *49/617*

U.S. Cl. 568—374 **1 Claim**

1. A pure enantiomer of one of the formulae below



wherein

R_1, R_2, R_3, R_4, R_5 and R_6 may be H, C_1 to C_8 alkyl, C_1 to C_8 alkoxy, hydroxylated and/or carbonylated C_1 to C_8 alkyl groups which can contain one or more double and/or triple bonds and may also be —C≡N or —COOH and/or an ester thereof or

wherein R may be H, C_1 to C_8 alkyl, C_1 to C_8 alkoxy and a hydroxylated and/or carbonylated C_1 to C_8 alkyl group which can contain one or more double bonds and/or triple bonds and, moreover, the carbonyl group can be acetalized or ketalized, and

R_7 and R_8 may be H, C_1 to C_8 alkyl, C_1 to C_8 alkoxy and hydroxylated and/or carbonylated C_1 to C_8 alkyl groups which can contain one or more double bonds and/or triple bonds.

4,454,353

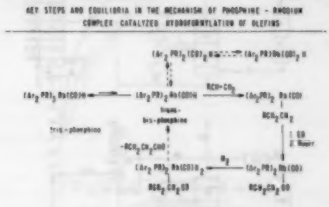
TRIHYDROCARBYL SILYL SUBSTITUTED ALKYL DIARYL PHOSPHINE TRANSITION METAL COMPLEXES AND THEIR USE AS HOMOGENEOUS HYDROFORMYLATION-ALDOLIZATION CATALYSTS

Alexis A. Oswald, Mountainside, N.J.; Torris G. Jermansen, Staten Island, N.Y.; Andrew A. Westner, Paramus, and I-Der Huang, Upper Saddle River, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 295,193, Aug. 21, 1981, which is a continuation-in-part of Ser. No. 192,810, Oct. 1, 1980, which is a division of Ser. No. 11,238, Feb. 12, 1979, Pat. No. 4,298,541. This application Sep. 29, 1982, Ser. No. 426,663

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **16 Claims**



1. A combined hydroformylation-aldolization process for converting, a C_n olefin to a C_{2n+2} aldehyde comprising the steps of:

(a) reacting said olefin with CO and H_2 at a temperature in the range of about 50° to 200° C. and a total pressure in the range of about 15 to 2000 psia in a reaction zone containing a liquid reaction mixture comprising a base aldol condensation catalyst and a homogeneous, non-charged catalyst complex of the formula:

$$[(Ar_2PQ)_ySiR_{4-y}]_g(RhX_n)_s$$

wherein Ar is a substituted or unsubstituted C_6 to C_{10} aromatic radical, Q is an unsubstituted or substituted C_1 to C_{30} saturated open chain alkylene radical; R is an unsubstituted or monosubstituted C_1 to C_{10} hydrocarbyl radical, X is an anion or organic ligand, excluding halogen, satisfying the valence and coordination sites of the metal, y is 1 to 6, g is 1 to 6 with the proviso that g times y is 1 to 6, n is 2 to 6, s is 1 to 3, said substituents on said hydrocarbyl radical, being chemically unreactive with materials used in and the products of the hydroformylation reaction, and

(b) withdrawing said liquid reaction mixture from said reaction zone and recovering said C_{2n+2} aldehyde.

4,454,354

MANUFACTURE OF AQUEOUS FORMALDEHYDE

Theodore V. Ferris, and Richard C. Kmetz, both of Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 2, 1982, Ser. No. 404,210

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ C07C *45/29, 47/04*

U.S. Cl. 568—473 **19 Claims**

1. A process for the manufacture of an aqueous solution of formaldehyde comprising the steps of:

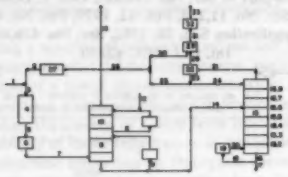
(a) oxidatively dehydrogenating methanol with air in the presence of a silver or copper catalyst and steam at elevated temperature in a dehydrogenation reactor;

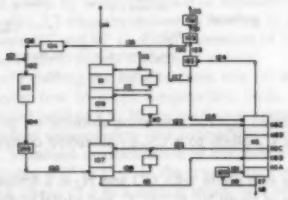
(b) absorbing the reaction product in an absorption train comprising one or more absorption stages in series to form an aqueous formaldehyde solution containing free and combined method;

(c) feeding the aqueous formaldehyde solution from the

absorption train to a distillation column comprising at least about 1.5 theoretical plates for methanol stripping;

(d) stripping a mixture of vapors of methanol, formaldehyde and water from the aqeuous formaldehyde solution by fractional distillation in the column at a pressure in the range of about 10 to about 105 kPa at the top of the column, wherein the concentration of water and methanol in the vapor mixture stripped from the column is greater than the concentration of water and methanol in the solution fed from the absorption train;





(e) passing at least about 17 percent of the vapor mixture stripped from the column to the dehydrogenation reactor and returning the remainder as reflux to the distillation column; and

(f) removing as product from the bottom of the stripping column as aqueous solution of formaldehyde containing a higher concentration of formaldehyde and a lower concentration of water and methanol than the solution fed to the column from the absorption train.

4,454,355

PROCESS FOR THE PREPARATION OF P-NITROPHENETOLE

Hans Schubert, Kelkheim, and Konrad Baessler, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,217

Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120912

Int. Cl.[3] **C07C** *76/02, 79/35*

U.S. Cl. 568—584 **2 Claims**

1. In a process for the preparation of p-nitrophenetole wherein p-chloro nitro benzene and ethanol are heated with 1.1 to 3 mols of an alkali metal hydroxide per mol of p-chloro nitro benzene and in the presence of a phase transfer catalyst and in the absence of a solvent, the improvement consisting of carrying out the reaction at a temperature of from 65° to 75° C.

4,454,356

PRODUCING METHYL ETHERS OF BRANCHED MONOOLEFINS

Divakaran Masilamani, Morristown, and Andiappan K. S. Murthy, Lake Hiawatha, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 324,726, Nov. 25, 1981. This application Oct. 14, 1982, Ser. No. 431,978

Int. C.[3] **C07C** *41/06, 41/42;* **B01D** *3/34*

U.S. Cl. 568—697 **12 Claims**

1. In a process of producing a methyl ether by reacting methanol with a hydrocarbon stream comprising at least about 5 mole percent of at least one branched monoolefin of 4–6 carbons having a carbon bonded to exactly 3 other carbons in the presence of at least about 10 percent alkanesulfonic acid by mols of methanol; wherein said hydrocarbon stream is fed adjacent to the base of a reaction column, wherein said methanol and methanesulfonic acid are fed intermediate the base and top of the reaction column, and wherein an overhead stream is removed containing hydrocarbons depleted in said branched monoolefin; the improvement wherein the temperature of the reaction column at and below the alkanesulfonic acid feedpoint is sufficiently high for the operating pressure to cause the product methyl ether to migrate upward above said alkanesulfonic acid feedpoint in admixture with unreacted hydrocarbons, and wherein methanol is fed sufficiently below said alkanesulfonic acid feedpoint for methanol to be substantially removed from the reaction column above said alkanesulfonic acid feedpoint.

4,454,357

PROCESS FOR PRODUCING O-METHYLATED PHENOLS

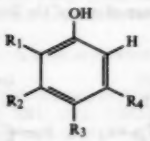
Yasuhiko Inoue; Tadao Nishizaki, both of Niihama, and Satoshi Taguchi, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 26, 1982, Ser. No. 411,806

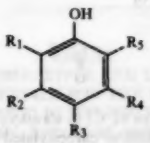
Int. Cl.[3] **C07C** *37/16*

U.S. Cl. 568—804 **3 Claims**

1. A process for producing an o-methylated phenol comprising reacting methanol with a phenol represented by the formula,



wherein R_1, R_2, R_3 and R_4 represent hydrogen, alkyl of 1 to 5 carbon atoms, hydroxyl, halogen, nitro, methoxy, amino or aromatic hydrocarbon residue, characterized by using a catalyst containing at least one compound selected from the group consisting of (1) magnesium oxide, manganese oxide and iron oxide which are all pre-treated with a phenol represented by the formula,

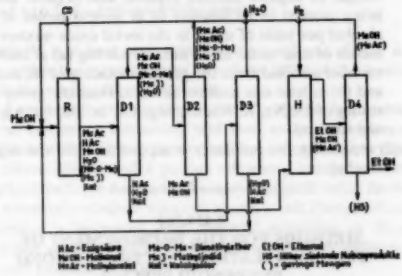


wherein R_1, R_2, R_3, R_4 and R_5 represent hydrogen, alkyl of 1 to 5 carbon atoms, hydroxyl, halogen, nitro, methoxy, amino or aromatic hydrocarbon residue, and (2) magnesium phenolate, wherein the temperature of the reaction is from 300° to 570° C. and wherein the feed ratio by mole of phenol to methanol is 4:1 to 1:10.

4,454,358
CONTINUOUS PRODUCTION OF ETHANOL AND PLURAL STAGE DISTILLATION OF THE SAME

Rudolf Kummer, Frankenthal; Volker Taglieber, Eppelheim, and Heinz-Walter Schneider, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 7, 1982, Ser. No. 337,683
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101750
Int. Cl.³ B01D 3/00; C07C 29/80
U.S. Cl. 568—885 2 Claims



1. A process for the continuous production of ethanol via the carbonylation of methanol, which comprises

(a) carbonylating methanol with carbon monoxide in a reactor R, in the presence of a carbonyl complex of a metal of group VIII of the periodic table which complex is dispersed in the liquid reaction medium, and in the presence of a halogen compound as activator;

(b) separating, in a distillation column D1, the reactor discharge, which essentially consists of methyl acetate, methanol, acetic acid, water and small quantities of dimethyl ether, an organo-halogen compound and the catalyst, into a top fraction comprising methyl acetate, methanol, dimethyl ether and the organo-halogen compound, and into a bottom fraction comprising water, small quantities of acetic acid and the catalyst, the residence time of the discharge in column D1 being so adjusted that the bulk of the acetic acid reacts with the methanol present to give methyl acetate;

(c) separating the top fraction from D1, in a distillation column D2, into a top fraction comprising small quantities of methyl acetate, methanol, dimethyl ether and the organo-halogen compound, and a bottom fraction comprising methyl acetate and methanol and recycling the top fraction to reactor R;

(d) distilling off, via the top distillation column D3, the greater part of the water from the bottom fraction from D1 and removing this water from circulation, and recycling to reactor R the bottom fraction consisting of small quantities of water, acetic acid and the catalyst;

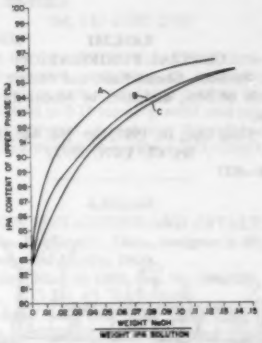
(e) using hydrogen to hydrogenate, in a hydrogenation reaction H, the bottom fraction from D2, to give a mixture of methanol and ethanol, and

(f) separating the mixture into ethanol and methanol in a distillation column D4, and recycling the methanol to reactor R.

4,454,359
PROCESS FOR DRYING ALCOHOLS

Donald A. Colgrove; Howard L. Schoggen, and Kenneth D. Wray, all of Memphis, Tenn., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 21, 1982, Ser. No. 390,620
Int. Cl.³ C07C 29/86, 31/10
U.S. Cl. 568—916 10 Claims



1. A process for the recovery of isopropyl alcohol from an aqueous mixture of said isopropyl alcohol comprising incorporating in said mixture

(a) a base selected from the group consisting of ammonium or an alkali or alkaline metal hydroxide, ammonium or an alkali or alkaline metal carbonate, or mixtures thereof, at a concentration of greater than about 0.5% in said mixture; and

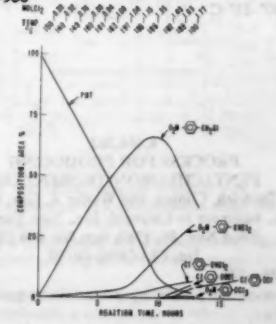
(b) an electrolyte comprising sodium chloride, glycolic acid, sodium glycolate, or sodium monochloroacetate, or mixtures thereof, at a concentration of from about 0.2% to about 2% in said mixture;

whereby said mixture separates into two immiscible layers; and separating said layers.

4,454,360
PREPARATION OF PARA-NITROBENZOTRICHLORIDE

William B. McCormack, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 1, 1982, Ser. No. 445,895
Int. Cl.³ C07C 79/12
U.S. Cl. 568—936 3 Claims



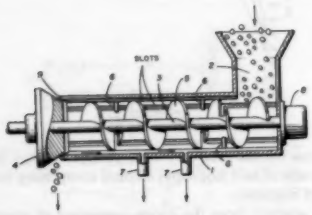
1. A process for preparing para-nitrobenzotrichloride from para-nitrotoluene comprising contacting para-nitrotoluene with chlorine gas for from about 2 to about 20 hours, at a

temperature of from about 120° C. to about 220° C., and a pressure of from about 1 to about 5 atmospheres in the presence of a catalytic amount of activated carbon, and recovering para-nitrobenzotrichloride.

4,454,361
CRYSTAL PURIFICATION

Suseelan R. Pookote, Chesterfield, and Melvin R. Bagley, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1982, Ser. No. 448,653
Int. Cl.³ C07C *79/12*
U.S. Cl. 568—937 **18 Claims**



1. A process for the continuous separation of a feed mixture of para-nitrochlorobenzene crystals and a liquid, the mixture comprising about 50–100 weight percent crude crystals and about 0–50 weight percent extra-crystalline liquid, the process comprising continuously feeding the mixture into at least one cylindrical press having a feed orifice, a substantially closed compression channel having drainage means and an ejection orifice, thereby subjecting the mixture in a first stage and at least one subsequent stage to pressure sufficient to substantially reduce interstitial space bewteen crystals while maintaining the crystals at temperatures below their melting point, causing backflow, drainage and removal of a substantial portion of the liquid leaving in the compression channel a purified crystal with compressed interstitial space; and continuously ejecting the purified crystal, the temperature of the crystals in the first stage being maintained at about 5°–80° C., the temperature of the crystals in at least one subsequent phase being maintained at a temperature at least 5° higher than the first stage and in the range of 60°–85° C.

4,454,362
PROCESS FOR PRODUCING PENTACHLORONITROBENZENE

Robert F. Dietrich, Clinton, and Walter A. Gay, Cheshire, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,757
Int. Cl.³ C07C *79/10*
U.S. Cl. 568—938 **14 Claims**

1. A process for producing pentachloronitrobenzene comprising:

reacting pentachlorothiophenol with a mixed nitration acid comprising nitric and sulfuric acid at a temperature from about about 35° C. to 110° C. to form pentachloronitrobenzene, said nitric acid being in molar excess of said pentachlorothiophenol.

4,454,363
PROCESS FOR PREPARING INORGANIC METAL OXYGEN COMPOSITION CAPABLE OF DEHYDROCOUPLING TOLUENE

Harry H. Teng, Waldwick; I-Der Huang, Upper Saddle River, and Hsuan L. Labowsky, Wayne, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 11, 1982, Ser. No. 387,693
Int. Cl.³ C07C *3/02, 3/20*
U.S. Cl. 585—428 **88 Claims**

1. A process for preparing a precursor metal oxygen composition capable of dehydrocoupling toluene when calcined which comprises:

(i) reacting a mixture of metal oxides in the presence of at least one alcohol under substantially anhydrous conditions of less than about 1%, by weight water, based on the weight of organic alcohol present, said organic alcohol being present in an amount of at least 3 moles of said alcohol per mole of metal in the metal oxide mixture, the metals of said metal oxide mixture having (a) at least one member selected from the group consisting of Bi, and Pb, and (b) at least one member selected from the group consisting of Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, Sb, Ag, Au, and Cu; and

(ii) separating the precursor composition from the organic alcohol.

4,454,364
METHODS FOR THE IMPROVEMENT OF TRANSALKYLATION REACTIONS AMONG BENZENOID SPECIES

Malvina Farcasiu, Princeton, N.J., and Thomas R. Forbus, Newtown, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,370
Int. Cl.³ C07C *5/22*
U.S. Cl. 585—470 **12 Claims**

1. A method for effecting the transfer of alkyl substituents from a first benzenoid specie to a second benzenoid specie comprising the steps of:

blending together said first and second benzenoid species;

acidifying said blend with an amount effective to provide catalysis for said transfer of an acid;

adding to said blend an amount effective to improve the rate of said transfer of at least one polynuclear aromatic hydrocarbon; and

maintaining said blend at a temperature above room temperature for a period of time sufficient to allow a substantial degree of said transfer to occur.

4,454,365
HYDROCARBON CONVERSION WITH A CRYSTALLINE CHROMOSILICATE CATALYST

Marvin R. Klotz, Batavia, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 281,828, Jul. 9, 1981, Pat. No. 4,405,502, which is a continuation-in-part of Ser. No. 69,236, Aug. 23, 1979, Pat. No. 4,299,808, which is a continuation-in-part of Ser. No. 927,843, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 733,269, Oct. 18, 1976, abandoned. This application Mar. 28, 1983, Ser. No. 479,700
Int. Cl.³ C07C *5/22*
U.S. Cl. 585—480 **9 Claims**

1. A process for the conversion of a hydrocarbon stream, which process comprises contacting said stream under hydrocarbon conversion conditions with a catalytic composition comprising a crystalline chromosilicate and a porous refractory inorganic oxide, said chromosilicate and said refractory inorganic oxide having been intimately admixed with one another, said chromosilicate comprising a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, Å	Assigned Strengths
11.15 ± 0.2	W
9.96 ± 0.2	VS
5.99 ± 0.1	VW
5.71 ± 0.1	VW
4.97 ± 0.1	W
3.85 ± 0.07	M
3.82 ± 0.07	MS
3.75 ± 0.05	M
3.32 ± 0.05	VW
1.99 ± 0.02	W

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2\ M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O,$$

wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is a value within the range of 0 to about 160.

2. A process for the isomerization of a xylene feed, which process comprises contacting said feed under isomerization conditions with the catalytic composition comprising a crystalline chromosilicate and a porous refractory inorganic oxide, said chromosilicate and said refractory inorganic oxide having been intimately admixed with one another, said chromosilicate comprising a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, Å	Assigned Strengths
11.15 ± 0.2	W
9.96 ± 0.2	VS
5.99 ± 0.1	VW
5.71 ± 0.1	VW
4.97 ± 0.1	W
3.85 ± 0.07	M
3.82 ± 0.07	MS
3.75 ± 0.05	M
3.32 ± 0.05	VW
1.99 ± 0.02	W

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2\ M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O,$$

wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is within the range of 0 to about 160.

4,454,366

METHOD OF RECOVERING AND RECYCLING BORON TRIFLUORIDE CATALYST

Roger F. Vogel, Jefferson Township, Butler County, Pa.; Ajay M. Madgavkar, Irvine, Calif., and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 396,255, Jul. 8, 1982, Pat. No. 4,384,162. This application Dec. 15, 1982, Ser. No. 450,070

Int. Cl.³ C07C *7/12, 3/18*

U.S. Cl. 585—525 **18 Claims**

15. A boron trifluoride-catalyzed chemical reaction in accordance with claim **14** in which said organic reactant comprises 1-decene.

4,454,367

PROCESS FOR THE LOW POLYMERIZATION OF ISOBUTENE

Satoshi Sakurada, Omiya; Takao Hashimoto, Iruma; Nobuaki Tagaya, Kawagoe; Tsugio Maeshima, Iruma; Kayako Ueda, Nerima, and Masahiro Kokubo, Iruma, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 476,015

Claims priority, application Japan, Mar. 23, 1982, 57-44684; Mar. 26, 1982, 57-47316

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—533 **13 Claims**

1. A process for the selective low polymerization of isobutene, which comprises contacting an isobutene-containing hydrocarbon mixture with a solid acid catalyst having a solid acid quantity of 0.05 to 0.25 mmol/g. solid acid catalyst, represented by the adsorption of pyridine, the solid acid catalyst being a high silica mordenite having a SiO_2/Al_2O_3 mole ratio of 50 to 200.

4,454,368

OLEFIN METATHESIS AND CATALYST

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 22, 1983, Ser. No. 506,950

Int. Cl.³ C07C *6/00*

U.S. Cl. 585—646 **16 Claims**

1. A process for disproportionating olefins which comprises contacting at least one feed olefin having at least 3 carbon atoms per molecule under reaction conditions with a catalytic amount of a catalyst composition produced by contacting an inorganic refractory oxide containing rhenium oxide and a promoting amount of at least one aluminum alkyl compound and subjecting same to conditions suitable for said aluminum alkyl to promote the activity of said rhenium oxide for the disproportionation reaction.

4,454,369

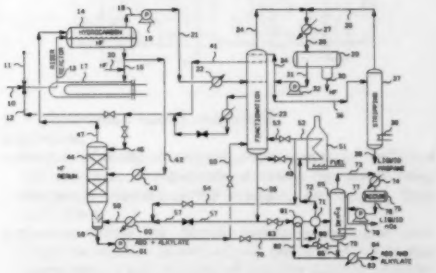
HF ALKYLATION PROCESS

Thomas Hutson, Jr., and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 7, 1982, Ser. No. 376,076

Int. Cl.³ C07C *2/56*

U.S. Cl. 585—719 **6 Claims**



1. In an HF alkylation process wherein ASO is removed from an HF acid catalyst in a fractionation zone, the improvement which comprises:

(a) charging a condensible stream comprising vaporous and liquid alkylate and vaporous n-butane to said fractionation zone;

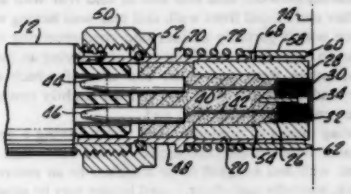
(b) condensing said stream within said fractionation zone thereby producing a condensate (i) which releases heat to effectuate at least partial separation of said HF acid catalyst and ASO in said fractionation zone and (ii) which dilutes the separated ASO to effectuate its removal from said fractionation zone in a bottoms fraction comprising alkylate, n-butane, ASO, and any remaining HF acid.

4,454,370

THERMOCOUPLE SURFACE PROBE

Henry P. Voznick, Arcadia, Calif., assignor to Wahl Instruments, Inc., Culver City, Calif.

Filed Sep. 7, 1982, Ser. No. 415,338
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—221 4 Claims



1. A portable heat sensing surface probe comprising

a connector body adapted to be connected to a probe handle,

a thermocouple housing having a rearward end mounted in said body and having a forward end,

a thermocouple sensor mounted in said housing and projecting forwardly of said forward end,

a protective sleeve circumscribing said forward end and said projecting sensor, said sleeve being slidably mounted on said connector body for motion between a forward position in which a forward end of the sleeve projects forwardly beyond the sensor to guard the sensor against inadvertent contact and a retracted position in which said sleeve forward end is retracted to allow contact of the sensor with a surface,

means for urging said sleeve toward said forward position whereby said sensor is normally protected by the circumscribing and projecting sleeve in its forward position and whereby said sleeve may be readily shifted to said retracted position by pressing the probe against a surface to allow the sensor to contact the surface, and

stop means for limiting motion of said sleeve to said retracted position, the forward end of said sleeve, in said retracted position being slightly forward of the forward end of said thermocouple housing, thereby to prevent contact of said thermocouple housing and surface when said thermocouple sensor contacts the surface,

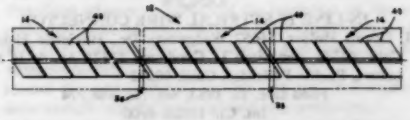
said sensor comprising first and second resilient coils of mutually different thermocouple material extending along and within said housing, said coils having rearward ends fixed to and within the housing and having forward ends projecting beyond the housing, said forward ends being mutually interconnected to provide a thermocouple junction that is resiliently mounted to said housing.

4,454,371

SOLAR ENERGY CONCENTRATOR SYSTEM

Frank A. Folino, Brookline, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 3, 1981, Ser. No. 326,972
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—246 9 Claims



1. A solar energy concentrator system comprising:

(a) at least one row of concentrator arrays;

(b) each of said concentrator arrays including a plurality of spaced adjacent longitudinally extending concentrator modules;

(c) means interconnected between said adjacent concentrator modules for rotatably supporting said concentrator modules as a unit;

(d) means operably connected to each end of each of said concentrator arrays for supporting each of said concentrator arrays and for providing controlled rotational movement thereto;

(e) each of said plurality of concentrator modules having a semi-cylindrically-shaped housing and a semi-cylindrically-shaped cover secured thereto thereby forming a cylindrically-shaped concentrator module, said cover being made of a material being transparent to the wavelength of said solar energy;

(f) means connected to said housing and situated within said cover for receiving said solar energy and for concentrating and directing said solar energy in a predetermined direction, said solar energy receiving and concentrating means including at least one reflector panel, said reflector panel being in the shape of a parallelogram, and means connected to said reflector panel for securing said reflector panel to said housing such that each end of said panel extends a predetermined distance into said space between said adjacent concentrator modules; and

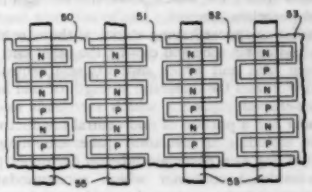
(g) means mounted within said cover in optical alignment with said predetermined direction for receiving said concentrated solar energy and for converting said solar energy into electrical power.

4,454,372

PHOTOVOLTAIC BATTERY

Anthony J. Appleby, Mountain View, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 17, 1981, Ser. No. 255,312
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—250 1 Claim



1. A photovoltaic battery comprising

a substrate,

a plurality of conductive layers formed on a major surface of said substrate, said plurality of conductive layers being alternately interdigitatedly arranged and spaced from each other,

a plurality of first type discrete semiconductor bodies positioned on one side of each of said plurality of conductive layers, each of said plurality of first type discrete semiconductor bodies including a first region of a first conductivity type and a second region of a second conductivity type, said first and second regions defining a PN junction, said first region contacting one of said conductive layers,

a plurality of second type discrete semiconductor bodies positioned on an opposite side of each of said pluralities of conductive layers, each of said plurality of second type discrete semiconductor bodies including a first region of said first conductivity type and a second region of said second conductivity type, said first and second regions defining a PN junction, said second region contacting one of said conductive layers,

a plurality of third type transparent conductive layers overlying said pluralities of first and second type discrete

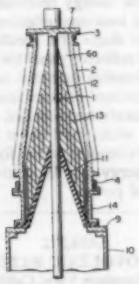
semiconductor bodies and electrically interconnecting said second regions of said plurality of first type semiconductor bodies and said first regions of said plurality of second type semiconductor bodies whereby photons impinging on said semiconductor bodies generate a voltage between adjacent ones of said plurality of conductive layers.

4,454,373

BUSHING FOR GAS-INSULATED ELECTRICAL EQUIPMENT

Mitsuhiro Kishida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1982, Ser. No. 442,430
Claims priority, application Japan, Nov. 20, 1981, 56-187254
Int. Cl.³ H01B *17/28, 17/36*
U.S. Cl. 174—31 R **4 Claims**



1. A bushing for gas-insulated electrical equipment comprising:
a porcelain tube having one closed end;
a central conductor which penetrates through the center of said porcelain tube;
an insulation spacer having a conical shape protruding into said porcelain tube and closing the other end of said porcelain tube, and which supports said central conductor and increases the dielectric strength of said bushing;
a cone-shaped capacitor which surrounds said insulation spacer and a portion of said central conductor;
means, including an insulation spacer-mounting flange, for supporting said porcelain tube on the upper portion of a gas-insulated container which accommodates electric equipment to be connected to said central conductor; and
an insulating material contained in said porcelain tube, surrounding said capacitor.

4,454,374

ELECTRIC CORD HOLDER AND COVER

Ronald M. Pollack, 73-19 37th Rd., Jackson Heights, N.Y. 11372

Continuation-in-part of Ser. No. 323,651, Nov. 20, 1981, abandoned. This application Nov. 19, 1982, Ser. No. 443,037
Int. Cl.³ H02G *3/04*
U.S. Cl. 174—68 C **19 Claims**

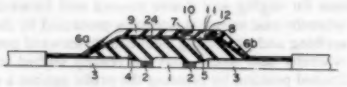
1. An electric cord holder, comprising:
a sheath made of an elongated plastic extrusion having a slotted-tubular cross-section so as to define a cord-receiving channel therein, said sheath having a dome-shaped front wall having two ends and a planar rear wall joined to one end of said front wall and extending from said one end of said front wall towards the other end of said front wall, said rear wall having a free end leaving a slot adapted for insertion of an electrical cord into said cord-receiving channel between said free end of said rear wall and said other end of said front wall, said rear wall having an inner face which partially defines said cord-receiving channel and an outer face, said front wall also having an overhang depending from said other end thereof which extends beyond said outer face and at least slightly toward said free end of said rear wall; and
securing means of predetermined width having a generally planar outer surface connected to said outer face of said rear wall and adapted to be attached to an external surface, whereby said electric cord holder may be attached to said external surface with said overhang substantially abutting said external surface.

4,454,375

POWER CABLE JOINT STRUCTURE HAVING SHEATH ISOLATION MEMBER CONTAINING ELECTRODE SPHERES

Michio Takaoka, Chiba; Motoyuki Ono, Sakura, and Isao Kaji, Ichikawa, all of Japan, assignors to The Fujikura Cable Works, Limited, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,304
Claims priority, application Japan, Mar. 27, 1982, 57-49636
Int. Cl.³ H02G *15/08, 15/188*
U.S. Cl. 174—73 R **10 Claims**



1. A power cable joint structure comprising:
first insulated cable conductor having one end with an exposed conductor;
second insulated cable conductor having one end with an exposed conductor;
connecting means for connecting said exposed conductors of said first and second insulated cable conductors, whereby said first insulated cable conductor and said second insulated cable conductor are rendered electrically conductive with respect to each other and a joint is formed;
cable shielding layer means covering said joint and portions of said first and second insulated cable conductors, and having a pair of electrodes located opposite to each other defining a gap therebetween;
reinforcing insulating means disposed between said joint and said cable shielding layer means; and
sheath isolation means, located substantially in said gap, including an insulator with a plurality of electrode spheres disposed therein.

4,454,376

IN-LINE ELECTRICAL WIRE CONNECTOR

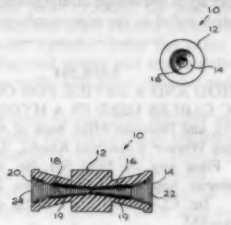
H. Dennis Holder, 16052 Wedgworth Dr., Hacienda Heights, Calif. 91745, and Herb L. Goodman, 17321 Av. de la Herradura, Pacific Palisades, Calif. 90272

Filed Dec. 13, 1982, Ser. No. 448,974
Int. Cl.³ H01R *4/00*
U.S. Cl. 174—87 **10 Claims**

1. A connector for electrical conductors including:
a unitary shell of electrically non-conducting material and having a first end, a second end and a center portion;
said unitary shell having first and second frustro-conically

shaped bores therein joined at their narrow ends in said center portion of said shell, said bores having an axis;

a continuous wire thread fixedly supported along the surfaces of said first and second bores and being coaxial with said bores, whereby said continuous wire thread has first and second conductor-engaging frustro-conical sections



each of substantially the same taper as its respective adjoining bore;

said first frustro-conical section of said wire thread being wound in a left-handed manner, said second frustro-conical section of said wire thread being wound in a right-handed manner.

4,454,377

OIL WELL CABLE

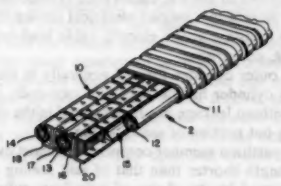
David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jun. 21, 1982, Ser. No. 390,308

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.³ H01B 7/18

U.S. Cl. 174—103 **18 Claims**



1. An improved electrical cable comprising:

a plurality of elongated, individually insulated electrical conductors lying in one plane in substantially parallel relationship,

an exterior jacket surrounding said conductors to form a cable;

a first elongated member extending adjacent and parallel to one of said conductors for resisting forces applied to said jacket in a direction substantially perpendicular to said one plane, said first member having first, second and third legs, said first leg joined to said third leg and extending therefrom adjacent a surface of the insulation on the one conductor, said third leg having a lesser compressibility in said direction than said insulation on said one conductor adjacent thereto,

a second elongated member mounted on said first member intermediate said first leg and said one conductor,

said first member having a plurality of longitudinally spaced slots extending inwardly thereof for facilitating bending of said third leg, said second member bridging the slots in said first member to protect the surface insulation on said one conductor.

4,454,378

ARCUATE ARMORED CABLE

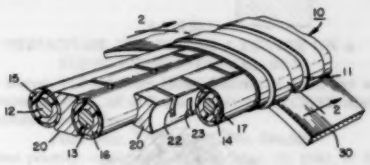
David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Dec. 8, 1982, Ser. No. 447,969

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.³ H01B 7/18

U.S. Cl. 174—103 **17 Claims**



1. An electrical cable structure comprising:

a plurality of elongated, insulated conductors having substantially parallel longitudinal axes, the insulated conductors being spaced laterally from one another;

a jacket of rigid, transverse cross-section covering said conductors, said jacket being elongated in transverse cross-section and comprised of opposite edge portions and opposite side portions, said side portions of said jacket having a preformed, arcuate shape in transverse cross-section, the rigidity of said jacket maintaining the structure arcuate in its transverse cross-section.

13. In combination, an electrical cable and an elongated structure having an arcuate surface portion upon which the cable is mounted, said cable being elongated and having a longitudinal axis and a flattened transverse cross-sectional shape, said cable being rigid in transverse cross-section and flexible for long radius bending along the longitudinal axis thereof, at least a portion of said cable cross-section preformed with a rigid curvature which conforms substantially to the curvature of said surface portion of said structure at least over the length of said surface portion of said structure opposite the cable.

4,454,379

SEMI-CONDUCTIVE, MOISTURE BARRIER SHIELDING TAPE AND CABLE

William K. S. Cleveland, Roselle, N.J., and William J. Pabis, Hagaman, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 21, 1982, Ser. No. 380,584

Int. Cl.³ H01B 7/18

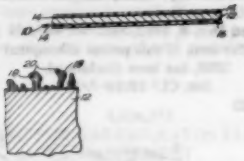
U.S. Cl. 174—107 **6 Claims**

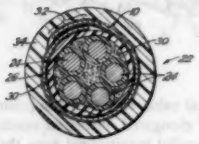
6. An electrical cable comprising a core including a plurality of insulated conductor means, a laminated shield completely surrounding the circumference of said core, and an outer jacket of insulation over the outside of said shield of a polyolefin extrusion product said laminated shield comprising:

(a) a metallic foil selected from the group consisting of aluminum, copper, iron, steel, silver, gold and tin;

(b) a first layer of an electrically conducting adhesion promoting material thinly coating both of the major surfaces of said metallic foil; and

(c) a second outer layer over said first layer adhered to both major surfaces of said metallic foil of a semiconductive





polymer material, whereby a continuous, polymer encased metallic foil laminate is provided.

4,454,380

STABILIZED MULTIFILAMENT SUPERCONDUCTOR MADE OF BRITTLE, PREREACTED Nb_3Sn FILAMENTS IN A BRONZE MATRIX

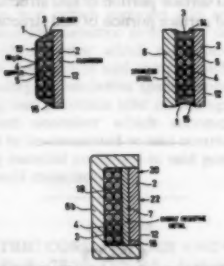
Peter Turowski, Eggenstein-Leopoldshafen, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,891

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112372

Int. Cl.³ H01B *12/00*; H01L *39/24*

U.S. Cl. 174—128 S **13 Claims**



1. A stabilized multifilament superconductor of brittle, prereacted Nb_3Sn filaments in a bronze matrix with the electrical performance of said superconductor, under superconductive conditions, being stabilized, comprising a superconductor core containing the prereacted Nb_3Sn filaments in a bronze matrix and a bridge soldered in parallel to the superconductor core and containing a band of purest aluminum, the solder being a soft solder which is a metal alloy having a melting point between 200° C. and 250° C., and said bridge containing a layer of highly resistive metal between the superconductor core and the band of purest aluminum.

7. Method for producing a multifilament superconductor of brittle, prereacted Nb_3Sn filaments in a bronze matrix, with the electrical performance of said superconductor under superconductive conditions, being stabilized, comprising providing a superconductor core containing prereacted Nb_3Sn filaments in a bronze matrix, and soft soldering a bridge containing a band of purest aluminum to at least one side of the superconductor core, the soft solder being a metal alloy having a melting point between about 200° C. and 250° C., wherein in order to suppress eddy currents, the bridge further comprises a layer of highly resistive metal between the superconductor core and the band of purest aluminum to serve as a resistance barrier, and the soldering of the bridge comprises soldering the layer of highly resistive metal to the superconductor core.

4,454,381

METHOD AND A DEVICE FOR CONNECTING ELECTRIC CABLES USED IN A HYDRAULIC SYSTEM

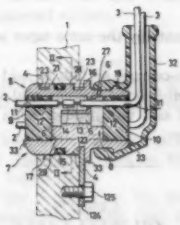
Yasunobu Ito, and Nobuaki Miki, both of Aichi, Japan, assignors to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Aug. 24, 1982, Ser. No. 411,068

Claims priority, application Japan, Aug. 31, 1981, 56-136747

Int. Cl.³ H02G *3/22*; H01R *43/00*

U.S. Cl. 174—151 **16 Claims**



1. An electric cable connecting and sealing device in a hydraulic system, for electrically connecting the free ends of a predetermined number of electric cables each connected electrically at one end thereof to a first electrical device which operates in the housing of hydraulic machinery used in sid hydraulic system and the corresponding free ends of a predetermined number of electric cables each connected electrically at one end thereof to a second electrical device disposed outside of said housing, at the electric cable lead-out portion of said housing, comprising:

a sealing outer cylinder formed generally in the shape of a hollow cylinder having opposite open ends, and adapted to fit without leakage in a hole formed in the electric cable leading-ov⁴ portion of said housing,

a sealing partition member comprising a short cylinder of an axial length shorter than that of said sealing outer cylinder, formed in the shape of a hollow cylinder having opposite open ends and disposed in said sealing outer cylinder, an annular first partition wall formed at one axial end of said short cylinder perpendicularly to the center axis of said short cylinder so as to connect the inside surface of said sealing outer cylinder and the outer circumference of said short cylinder, and second partition walls of a predetermined number extending radially of said short cylinder, said second partition walls being provided with short stopper portions extending axially at least from one end of said short cylinder and said first partition wall being provided through holes for receiving said electric cables therethrough, and

plug members formed of an elastic material, such as soft rubber or a synthetic rubber, generally in the shape of a cylinder capable of being closely fitted in the open ends of said sealing outer cylinder and having through holes of a predetermined number,

one of said plug members being inserted into one open end of said sealing outer cylinder with either of said electric cables connected to said first electrical device or said electric cables connected to said second electrical device passed through the through holes and held elastically by said sealing outer cylinder at a position where said plug is

in abutment with said stopper portions formed in the second partition walls of said sealing partition member,

the free ends of said electric cables extending through the through holes of said plug member and through the holes formed in the first partition wall of said sealing partition member so as to be positioned within the respective spaces defined by said second partition walls, said sealing outer cylinder and said short cylinder, the junctions between said electric cables and other electric cables inserted into said sealing outer cylinder from the other open end thereof being disposed within said spaces defined by said second partition walls, said outer cylinder and said short cylinder, and

at least a space defined by said plug member and said first partition wall within the cavity of said sealing outer cylinder and the center bore of the short cylinder of said sealing partition member are filled with a filler.

10. In a method for electrically connecting the free ends of a predetermined number of electric cables each connected at one end thereof to a first electrical device which operates within the housing of hydraulic machinery and the free ends of a predetermined number of electric cables each connected at one end thereof to a second electrical device disposed outside of the housing, said connection being made at the electric cable lead-out portion of the housing, the method comprising the steps of:

passing the free ends of either said cables connected to said first electrical device or said cables connected to said second electrical device through a predetermined number of through holes, respectively, which are formed in a plug member formed practically in a cylindrical shape from an elastic material such as soft rubber or a synthetic rubber;

passing the free ends of the other electrical cables through a sealing member integrally comprising a sealing outer cylinder formed in the shape of a holllow cylinder and open at the opposite ends, and a sealing partition member consisting of a short cylinder of small diameter disposed in said outer cylinder, said short cylinder being open at the opposite ends and having an axial length shorter than that of said outer cylinder, an annular first partition wall disposed at one axial end of said short cylinder in a plane practically perpendicular to the center axis of said short cylinder for connecting the inside surface of said outer cylinder and the outside surface of said short cylinder, and a predetermined number of second partition walls disposed radially of said center axis, from one open end of said outer cylinder through holes formed in said first partition wall and spaces formed between said second partition walls to make the free ends of the electric cables project outside of the other open end of said outer cylinder;

stripping a portion of the coatings off at the respective free ends of both electric cables and electrically connecting the corresponding exposed ends of both electric cables,

inserting said plug member in one open end of said outer cylinder axially of said outer cylinder so deeply that only a small space remains between said plug member and one end of said short cylinder of said sealing partition member, and making the outer circumference of said plug member elastically engage with the inside surface of said outer cylinder,

positioning the junctions between the corresponding electric cables in the respective spaces formed by partitioning a space between said outer cylinder and said short cylinder with said second partition walls,

pouring a fluidized filler from one open end of said short cylinder into and through the axial central bore of said short cylinder for filling spaces around the junctions between said corresponding electric cables with said filler and making said filler flow at least into a cavity defined by said plug member and said first partition wall within said outer cylinder for filling up said cavity with said filler, and

attaching said sealing member in a liquid-tight manner to a hole formed in the electric cable lead-out portion of said housing through the engagement of the outer circumference of said outer cylinder with the inside surface of said hole, after the filler has been solidified.

4,454,382

STRUCTURE FOR FIXING A DEVICE ON A SUPPORTING CHANNEL BAR

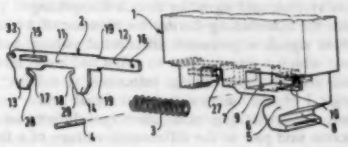
Andre Borne, Villeurbanne; Henri Guernet, Lyons, and Andre Marmonier, Bron, all of France, assignors to CGEE Alsthom, Levallois-Perret, France

Filed Mar. 2, 1982, Ser. No. 354,265

Claims priority, application France, Mar. 23, 1981, 81 05728

Int. Cl.³ H01B *17/24*

U.S. Cl. 174—158 R **3 Claims**



1. Structure for fixing a device on a supporting channel of symmetrical or assymmetrical type, said means comprising, in combination:

a base of an insulating housing,

said base comprising a rigid leg,

said rigid leg being situated near one end of the base, forming part of said base and depending therefrom,

a fixing component,

a compression spring,

said fixing component having an elongated narrow body,

a first rigid hook and a second rigid hook integral with said body and projecting outwardly from said body at longitudinally spaced positions to the same side of said body,

a rod integral with said body and extending from one end thereof and being narrower than the body, such that the rod and the body define shoulders therebetween at their juncture, the first hook being situated at the other end of the body furthest from the rod, the second hook being situated between the first hook and the rod, the base having a first recess and a second recess aligned therewith at its end nearest to the leg,

said compression spring being installed in said first recess,

the height of the first recess being equal to the height of the fixing component body, and its length being such that the compression spring is installed partially compressed thereon,

the second recess following the first recess and having a height equal to the height of the rod,

said base including a longitudinal guide slot provided internally thereof between two opposed side surfaces of the base and communicating with the first recess, and

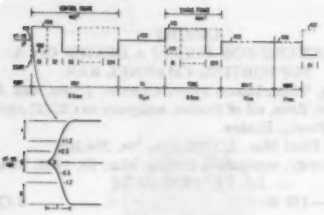
said fixing component slidably positioned within said slot with said rod projecting through said compression spring, and said rod being provided with a pin on the end thereof extending beyond the compression spring, and said rod being of a length such that said compression spring is installed partially compressed thereon with said spring compressed in the first recess in the case of assembly on a channel bar.

4,454,383

ASYNCHRONOUS DATA TRANSMISSION METHOD AND CIRCUITRY

Thomas H. Judd, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1982, Ser. No. 443,392
Int. Cl.³ H04L *15/26*
U.S. Cl. 178—3 14 Claims



1. A circuit for signaling the start of an asynchronous binary data transmission over a communication pair of a data communication system; said signaling circuit comprising:

means for establishing during the absence of a binary data input signal, a quiescent differential voltage across said pair which is intermediate to a first and a second differential voltage representing, respectively, a logic 0 and a logic 1 of said binary data input signal; and

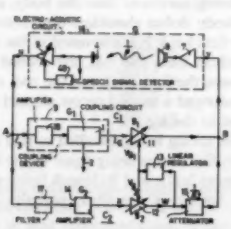
means for switching said quiescent differential voltage across said pair to the differential voltage of a first bit of said binary data input signal to signal the start of said binary data transmission.

4,454,384

HANDS FREE TELEPHONE WITH SWITCHABLE GAIN IN THE TWO SPEECH SIGNAL PATHS

Gilbert M. M. Ferrieu, Bievres; Yves J. F. Hetet, and Jacques Y. Balch, both of Lannion, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed May 10, 1982, Ser. No. 376,888
Claims priority, application France, Oct. 12, 1981, 81 19155
Int. Cl.³ H04M *9/08*; H04R *3/02*
U.S. Cl. 179—81 B 5 Claims



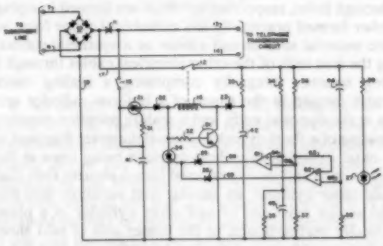
1. In a "hands free" telephone set in which a first path is formed between a microphone and a loudspeaker, comprising at least a coupling circuit and a first variable gain amplifier, a second path connected between said microphone and loudspeaker and comprising at least a second variable-gain amplifier controlled by a linear regulator connected to keep the output signal of the second amplifier constant as a function of its input signal, the gain of the said first amplifier being connected to be responsive to the gain of the said second amplifier, signal amplitude modification means being provided in at least one of said paths to ensure that the gain in the second path remains higher than the gain in the first path in the frequency band where loop oscillations may occur, said first and second paths having a common portion the improvement comprising a third variable-gain amplifier connected in said common portion, said signal amplitude modification means being adjusted in such a manner that the electro-acoustic loop closed by the second path permanently comprises a source of low-amplitude gain of the said third amplifier causing a gain variation in the opposite sence in said first amplifier.

4,454,385

LATCHING RELAY HOLD RELEASE CIRCUIT FOR A TELEPHONE INSTRUMENT

Gary Grantland, Hartselle, and Eduard F. B. Boeckmann, Huntsville, both of Ala., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Nov. 1, 1982, Ser. No. 437,931
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R 10 Claims



1. A hold release circuit for use with at least one telephone instrument and a hold circuit, said hold circuit connected to a subscriber line and a source of line voltage and said telephone instrument disconnected from said subscriber line, said hold release circuit comprising;

a latching relay including a coil and at least one contact controlled by said coil, said contact closed connecting said hold circuit to said subscriber line;

voltage storage means connected to said coil and arranged to charge to said subscriber line voltage;

first and second line voltage sensors each connected across said subscriber line and each producing a respective output representative of said line voltage, said first line voltage sensor including means for retaining the highest value of line voltage sensed;

comparator means having first and second inputs connected to said first and second line voltage sensor outputs, respectively, said comparator means arranged to produce an output signal responsive to said first and second line voltage sensors; and

switching means connected to said coil and said output of said comparator means, said switching means normally turned off; whereby said second line voltage sensor produces an output representative of a drop in line voltage when said telephone instrument is connected to said line causing said comparator to produce said output signal turning on said switching means and discharging said voltage storage means through said coil opening said contact and releasing said hold circuit.

4,454,386

PIEZOELECTRIC TRANSDUCER FOR PIEZOELECTRIC LOUD SPEAKER

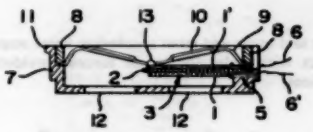
Akio Koyano, Osaka, Japan, assignor to Sumitomo Special Metal Co., Ltd., Osaka, Japan

Filed Oct. 26, 1981, Ser. No. 314,873

Claims priority, application Japan, Oct. 29, 1980, 55-152618; Nov. 25, 1980, 55-166044; Dec. 8, 1980, 55-173373; Dec. 9, 1980, 55-174425; Feb. 23, 1981, 56-25886

Int. Cl.³ H04R *17/00*

U.S. Cl. 179—110 A **11 Claims**



1. A loud speaker which includes a frame, a sound-producing element mounted in the frame, and a piezoelectric transducer fixedly connected at its first end to said frame and at its second end to said sound-producing elements, said piezoelectric transducer having a width (W_0) at the point where its first end is clamped to the speaker frame, a maximum width (W) and an effective length (L) from the point where its first end is clamped to the speaker frame to its second end, said piezoelectric transducer being shaped and dimensioned such that its width (W_0) is less than its maximum width (W) and the ratio of its maximum width (W) to its effective length (L) is between 0.75 and 3.

4,454,387

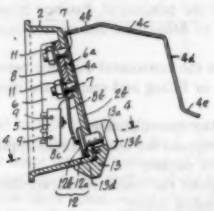
HANDSET HANGER AND SWITCH

Richard J. Danielson, Monroe, N.Y., and John E. Marquart, Northvale, N.J., assignors to Roanwell Corporation, New York, N.Y.

Filed Dec. 23, 1981, Ser. No. 334,065

Int. Cl.³ H04M *1/04, 1/02, 1/06*

U.S. Cl. 179—146 R **4 Claims**



4. A telephone handset hanger having at one end an operating front face of fixed dimensions and a posterior surface disposed at a fixed distance from the front face, said hanger including:

a. a casing adapted for mounting on a vertical surface and having a generally upwardly and downwardly extending front surface spaced from said vertical surface when the casing is mounted thereon;

b. spring means having a first portion mounted so as to abut said upwardly and downwardly extending surface, a second portion extending outwardly from the upper end of said first portion and a third portion extending downwardly from the outer end of said second portion;

c. switch means within said casing;

d. an actuator for said switch means projecting outwardly through said front surface, said actuator being biased to a first position in which it extends outwardly substantially beyond said front surface, and being movable against its bias to a second position in which its outer end is aligned with the front surface; and

e. an abutment extending outwardly beyond the lower end of the first portion of the spring means, said abutment being spaced from the second portion of the spring means by a distance sufficient to receive said one end of the handset housing snugly, and being spaced from the third portion of the spring means by a distance smaller than the corresponding dimension of the housing of the telephone handset to be supported on the hanger, so that said telephone handset may be mounted on the hanger by moving said one end between said abutment and said third portion, thereby deflecting the spring means, until said one end is received between the abutment and the second and third portions of the spring means, said housing of the handset being then biased by the spring means to engage said switch actuator and move it to its second position when the handset housing is inserted past said abutment;

f. a leaf spring mounted on the inside of the casing and biasing the actuator outwardly;

g. said switch means being mounted inside the casing for actuation by the leaf spring, said switch means being biased toward the leaf spring with a spring rate substantially lower than that of the leaf spring, so that the force required to move the switch actuator inwardly is substantially constant, as determined by the spring rate of the leaf spring;

h. studs fixed on the under side of the first portion of the spring means and extending into the casing;

i. a generally U-shaped frame having the bight of the U received on said studs;

j. said switch means being supported between the arms of the U-shaped frame; and

k. nuts on the studs for holding the spring member, the casing and the frame assembled, said leaf spring including a flat portion held in place against said frame by said studs and nuts, a second portion extending inwardly of the casing to a position adjacent the switch means and a third portion extending outwardly from said second portion and terminating adjacent said switch actuator for movement thereby.

4,454,388

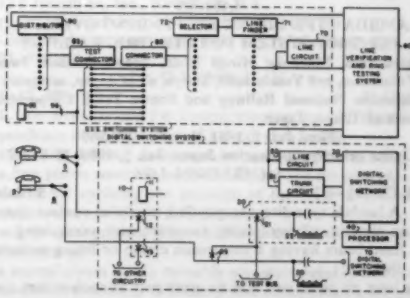
ARRANGEMENT FOR SUBSCRIBER LINE VERIFICATION AND RING TESTING

William R. Daniels, and John S. Young, Scottsdale, both of Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 1, 1982, Ser. No. 445,803

Int. Cl.³ H04M *3/26*

U.S. Cl. 179—175.2 R **15 Claims**



1. In a pre-cutover switching configuration, an arrangement for subscriber line verification and ring testing comprising:

a plurality of switching system subscribers;

a first switching system connected to said plurality of switching system subscribers, said first switching system being operated to connect any of said switching system subscribers to other switching system subscribers, said first switching system comprising:

said pluraity of switching system subscribers including at least a first subscriber being operatively connected to said first switching system for said connection to other switching system subscribers; and

test connection means connected to said first subscriber and said test connection means being operated to connect said first subscriber through said first switching system for a test access;

said arrangement for subscriber line verification and ring testing further comprising:

a second switching system connected to said plurality of switching system subscribers, said second switching system being in an untested condition for connecting said subscribers, said second switching system comprising:

said first subscriber connected to said second switching system for testing said connection to said other subscribers;

a switching network connected to each of said plurality of subscribers for establishing connection between at least two of said subscribers;

processor means connected to said switching network; and

circuit means selectively connectable between said first subscriber and said switching network, said circuit means being operable in response to said switching network to transmit a first signal to said first subscriber;

said arrangement for subscriber line verification and ring testing further comprising:

means for testing connected to said test connection means of said first switching system and connected to said switching network of said second switching system, said means for testing being operated to request connection to said first subscriber via said switching network;

said means for testing being connected to said first subscriber via said test connection means for said test access;

said processor means being responsive to said request of said means for testing to operate said switching network for connecting said circuit means to said first subscriber;

said circuit means being operated in response to said connection to said first subscriber to transmit said first signal to said first subscriber; and

said means for testing being further operated to detect said first signal via said test access throuh said first switching system for verifying said connection of said second switching system to said first subscriber and said means for testing being further operated to store an indication of said verification of said first subscriber's connection to said second switching system.

4,454,389

LAMBDA TYPE DIRECT SUSPENDING OVERHEAD CONTACT SYSTEM FOR ELECTRIC RAILWAY

Osamu Oda, Machida; Hiroji Noda, Tokyo; Masaru Iwase, Yokohama, and Yoshio Ishii, Tokyo, all of Japan, assignors to Japanese National Railway and Sanwa Tekki Corporation, both of Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,547

Claims priority, application Japan, Jul. 1, 1980, 55-88547

Int. Cl.³ B60M *1/24*

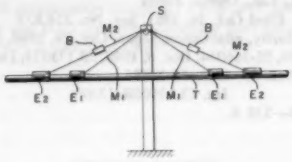
U.S. Cl. 191—43 **5 Claims**

1. A lambda type direct suspending overhead contact system for an electric railway having a contact wire, comprising:

a fixed beam having a suspension clamp or fitting mounted thereon;

at least an outer pair and an inner pair of anchor ears connected to said contact wire; and

outer and inner suspension wires connecting said suspension clamp or fitting on said fixed beam to said outer and inner pairs of anchor ears, respectively, so as to have a ratio of the tensile force applied to said outer suspension wires to the tensile force applied to said inner suspension wires is between 2.0 to 1 and 3.5 to 1,



wherein said outer and inner suspension wires suspend said contact wire under the tensile forces provided by the equations:

$$H = \frac{\frac{T_{t1}}{Sy - Sy'}\left[wy\frac{Sy + Sy'}{2} + wt\frac{S}{2}\right] + \frac{\frac{T_{y2}}{Sy'}\left[wy\frac{Sy}{2} + wt\frac{S - Sy - Sy'}{2}\right]}{\frac{T_{t1}}{Sy - Sy'}\left[\frac{T_{y1}}{Sy} + \frac{T_{y2}}{Sy'}\right] + \frac{T_{y1}T_{y2}}{Sy\,Sy'}}$$

$$\delta = H - \frac{\frac{T_{t1}}{Sy - Sy'}\left[wy\frac{Sy + Sy'}{2} + wt\frac{S}{2}\right] + \frac{\frac{T_{y1}}{Sy}\left[wy\frac{Sy'}{2} + wt\frac{Sy + Sy'}{2}\right]}{\frac{T_{t1}}{Sy - Sy'}\left[\frac{T_{y1}}{Sy} + \frac{T_{y2}}{Sy'}\right] + \frac{T_{y1}T_{y2}}{Sy\,Sy'}}$$

wherein:

H designates the vertical distance between said suspension clamp or fitting and said outer pair of anchor ears;

δ designates the vertical distance between said outer pair of anchor ears and said inner pair of anchor ears;

Sy designates the horizontal distance between said suspension clamp or fitting and one of said outer pair of anchor ears;

Sy′ designates the horizontal distance between said suspension clamp or fitting and one of said inner pair of anchor ears;

S designates the span distance;

T, T_{t1}, T_{t2} designate the tensile forces applied to the contact wire at three ranges;

T_{y1}, T_{y2} designate the tensile forces applied to the outer and inner suspension wires;

wt designates the unit weight of the contact wire; and

wy designates the unit weight of the suspension wires,

whereby said contact wire is supported so as to be substantially straight.

4,454,390

SWITCHING DEVICE FOR CONTROLLING SERVO DRIVE MECHANISMS OF VEHICLE SEAT

Günter Gmeiner, and Rolf Krügener, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1979, Ser. No. 56,236

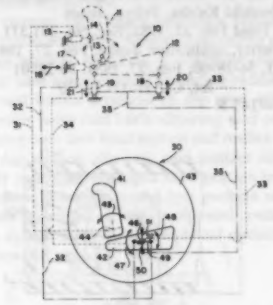
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836004

Int. Cl.³ H01H *25/00*

U.S. Cl. 200—6 A **22 Claims**

1. A switching device for controlling servo drive mecha-

nisms for adjusting at least one seat part of an autombbile seat, characterized in that a separate switching lever means adapted to be operatively connected with the servo drive mechanisms is provided for each seat part to be adjusted, and in that means



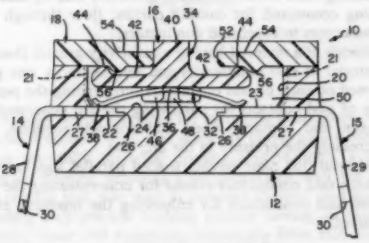
are provided for mounting the switching lever means so as to be displaceable in directions corresponding to intended adjusting directions of the seat part with which the switching lever means is associated.

4,454,391

LOW PROFILE DIP SWITCH

Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 29, 1982, Ser. No. 426,355
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—16 D **14 Claims**



1. An electrical switch of the type comprising stationary electrical contact members secured in a dielectric housing member, opposed inner contact sections of the contact members are coplanar with an upper surface of the housing member and are spaced from each other, outer contact sections of the contact members extend outwardly from respective sides of the housing member, a movable electrical contact assembly including a movable electrical contact member secured to a dielectric operating member, said movable electrical contact assembly adapted to be moved from one position with the movable electrical contact member having ends in electrical engagement with the inner contact sections to another position with one of the ends of the movable electrical contact member only engaging one of the inner contact sections and said upper surface of said housing member, and a cover member with an opening therethrough secured to said housing member, a section of the operating member extending through the opening, characterized in that:

said operating member has flexible cover sections extending along but spaced from said movable electrical contact member and also extending along an inner surface of said cover member, outer ends of said cover sections engaging said inner surface of said cover member;

projections extending outwardly from a bottom surface of said operating member, said movable electrical contact member having section members engaging said operating member thereby securing the movable electrical contact member to said operating member and the spring force of the movable electrical contact member forces the outer ends of the cover sections in engagement with said inner surface of said cover member;

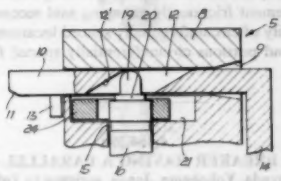
said operating member completely covering said movable electrical contact member and said outer ends of said cover sections in engagement with said inner surface keeping foreign matter from getting into the contact area.

4,454,392

SAFETY SWITCH

Werner Rapp, Südmährerstrasse 26, D-7340 Geislingen, and Peter Schmidt, Libanonstrasse 75, D-7000 Stuttgart 1, both of Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,375
Int. Cl.³ H01H *27/00*
U.S. Cl. 200—61.67 **22 Claims**



1. In a safety switch having a drive and locking device, which has a longitudinally movable drive member which forcibly switches the switch at least in one direction, a housing containing the drive and locking device and a key which can be formfittingly coupled with the drive and locking device and can be introduced into the housing, the movement of which key relative to the housing during introduction or removal from the drive and locking device is transformed into a forcible switching of the switch, the improvement wherein the drive member comprises a ram which can be actuated longitudinally directly by means of a key which touches said ram during actuation thereof, said locking device including a blocking member for said ram which can only be released by said key.

4,454,393

ELECTROHYDRAULIC SWITCHING DEVICE

Werner Volkmar, Idstein-Walsdorf, and Bernd Schütt, Oberursel-Weisskirchen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,756
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140800
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—82 R **26 Claims**

1. An arrangement for issuing electric control signals in dependence on the pressure of a fluid, comprising

a housing defining an internal bore centered on an axis;

a first piston received in said bore for axial movement;

means for applying the pressure of the fluid in one axial direction to the said first piston;

at least one spring urging said first piston in the other axial direction;

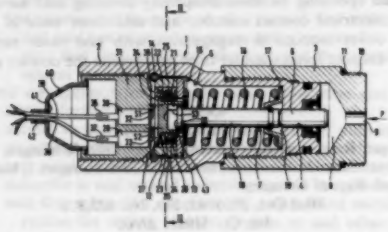
a second piston axially movably accommodated in said bore;

means for positively entraining said second piston for joint movement with said first piston only after said pistons have axially moved relative to one another within a predetermined range;

an electric switch interposed into the path of movement of

said second piston for actuation by the latter and operative for issuing the electric control signals in response to such actuation; and

means for retaining said second piston against movement with said first piston in the absence of positive entrainment



to provide for switch actuation hysteresis, including a generally annular and circumferentially incomplete retaining element frictionally engaging said second piston at a plurality of circumferentially spaced locations and having two end portions circumferentially spaced from one another.

4,454,394

CIRCUIT BREAKER HAVING A PARALLEL RESISTOR

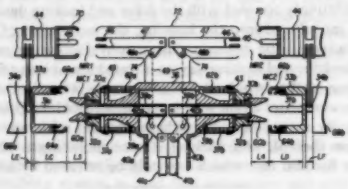
Mitsuru Toyoda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 19, 1981, Ser. No. 312,728

Claims priority, application Japan, Oct. 25, 1980, 55-149905

Int. Cl.³ H01H *9/40*

U.S. Cl. 200—145 **6 Claims**



1. A circuit breaker comprising:

a series connection of plural main interrupters connected in series between end terminals;

a plurality of parallel resistors;

a plurality of parallel interrupters, each of said parallel interrupters connected in series with a respective of said plurality of parallel resistors between said end terminals;

said series connection of main interrupters being connected in parallel with said parallel interrupters connected in series with said respective of said parallel resistors;

driving means for providing power to operate said main interrupters and said parallel interrupters;

connecting means attached to said main interrupters, said parallel interrupters and said driving means for transmitting the power of said driving means to operate said main interrupters and said parallel interrupters;

wherein said connecting means, said main interrupters and said parallel interrupters are configured so as to close said parallel interrupters before any of said main interrupers and to close at least one of said main interrupters at a time different than a time of closing of another of said main interrupters by at least 1 millisecond but less than or equal to 3 milliseconds.

4,454,395

CIRCUIT BREAKER

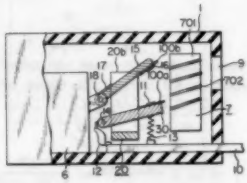
Shinji Yamagata; Fumiyuki Hisatsune; Junichi Terachi; Kiyomi Yamamoto, all of Fukuyama; Hajimu Yoshiyasu, Itami, and Yuichi Wada, Kawanishi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 351,311

Claims priority, application Japan, Feb. 27, 1981, 56-28896; Feb. 27, 1981, 56-28900; Feb. 27, 1981, 56-28901

Int. Cl.³ H01H *33/10*

U.S. Cl. 200—147 R **6 Claims**



1. A circuit breaker comprising:

a pair of contactors, one of said contactors being a movable contactor which is relatively movable away from and toward the other contactor to open and close an electric circuit, current responsive means connected to said movable contactor for moving said movable contactor away from the other contactor in response to an excess current flow through said circuit breaker, each of said contactors having a conductor and a contact secured thereto, said contacts abutting each other when said conductors are close to each other and the conductors of said contactors, when said contactors are in position with said contacts abutting each other, extending generally side-by-side and being connected for causing current flow through said conductors to repel said conductors;

arc shields of a material having a resistivity greater than the material of said conductors and said contacts, one positioned on each of said contactors surrounding the periphery of said contacts for narrowing the arc generated between said contacts when said contacts separate, and increasing the pressure in the arc; and

a U-shaped flux plate having spaced parallel legs between which said conductors extend for concentrating the flux from said conductors for enhancing the repulsive effect thereof.

4,454,396

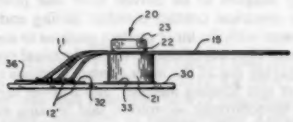
ELECTRICAL SWITCH FOR THICK/THIN FILM CIRCUITS

Wayne E. Neese, Hoffman Estates, Ill., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Jun. 3, 1982, Ser. No. 384,695

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—292 **6 Claims**



1. An electrical switching device arranged to electrically connect a plurality of electrical film circuits deposited on an appropriate substrate, said plurality of electrical film circuits each including at least one contact pad, said switching device comprising:

a pivot pin located adjacent to and equidistant from each contact pad, said pivot pin including a base section with a

bottom surface fixidly mounted to said substrate and a head section including a wide top portion tapering down into a narrower width away from said top portion forming a neck portion, said neck portion integrally joined to a base section top surface;

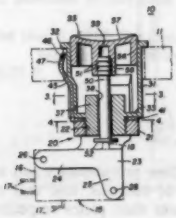
a contact element including a mounting portion and connecting means extending from said mounting portion, said mounting portion including a centrally located orifice having at least a pair of kerfs extending radially from said orifice, said orifice arranged to slip over said pivot pin head section with said kerfs allowing said orifice to expand fitting over said head section and resting on said base section top surface, allowing said contact element to be manually rotatable about said neck portion into at least a first position, whereby in said first position said connecting means communicate with a different contact pad connecting at least two of said electrical circuits forming a first connected set.

4,454,397

PUSH BUTTON SWITCH ASSEMBLY

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Jun. 23, 1982, Ser. No. 391,103
Int. Cl.³ H01H *13/04*
U.S. Cl. 200—296 **11 Claims**



1. A push button assembly for mounting in an aperture in an associated support wall, said assembly comprising a base having an internally threaded opening therethrough, a unitary one-piece housing including a peripheral side wall and an end wall closing said side wall at one end thereof, said end wall including a cylindrical bushing portion having an externally threaded outer end projecting outwardly from said end wall unitary therewith and threadedly engaged in said opening in said base, mounting means having an aperture therethrough and disposable in an assembled condition between said end wall and said base with said bushing portion extending through said aperture, said mounting means in its assembled condition being adapted for engagement with the associated support wall, an actuator member extending through said bushing portion of said end wall for sliding reciprocating movement axially thereof and having an inner end disposed in said housing, and push button means coupled to the inner end of said actuator member for movement therewith and disposed for access by a user at the other end of said housing.

4,454,398

TERMINAL SEAL FOR MINIATURE SEALED TOGGLE SWITCH

Louis F. Aschenbach, Menomonee Falls, and David E. Brown, Brookfield, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 16, 1981, Ser. No. 244,423
Int. Cl.³ H01H *9/04*
U.S. Cl. 200—302.3 **5 Claims**

1. A miniature environmentally sealed toggle switch comprising:

a housing having a base provided with a contact compartment and a cover having a bushing extending therefrom;

stationary contacts in said compartment having terminals extending through said base to the outside;

a movable contactor supported on one of said stationary contacts serving as a pivot therefor and being rockable in opposite directions to engage and disengage at least one other stationary contact;

a toggle lever extending down through said bushing and means pivotally supporting said toggle lever in said bushing for limited pivotal movement;

an actuator engaging said contactor and being slidable therealong to rock the same;

means coupling said toggle lever to said actuator comprising a hole in said actuator into which the inner end portion of said toggle lever extends and a frusto-conical compression spring biasing said actuator against said contactor so that said actuator slides along said contactor and concurrently

rocks in unison with said toggle lever as the latter is pivotally operated from one operating position to another;

and sealing means comprising a gasket hugging said toggle lever below its pivotal support means and means stretching under tension at ambient temperature said gasket to the periphery of said base and said cover to minimize inward or downward deflection of said gasket at lower temperatures;

said base comprising plastic thermoset material such as phenolic molded around a portion of each of said terminals;

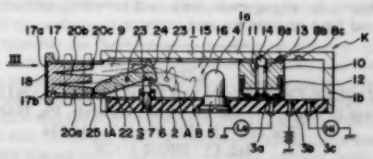
and each said terminal comprises sealing means consisting of a pair of spaced grooves extending all the way around said terminal and having sides of gradual curvature in said portion thereof molded and embedded in said base with the plastic molded material filling said grooves to maintain a tight seal therearound through a wide temperature range under different temperature coefficients of expansion of said terminal and base materials.

4,454,399

CHANGE-OVER POSITION DISPLAY DEVICE FOR USE IN A SWITCH

Masaru Suzuki, Chiryu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 29, 1982, Ser. No. 437,864
Claims priority, application Japan, Nov. 17, 1981, 56-171164
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—314 **10 Claims**



1. An electrical switch assembly for connection to an electri-

cal circuit and capable of displaying its operative state comprising:

a casing member;

means for varying the electrical conducting state of the circuit connected to the switch assembly;

a display member operatively positioned at one end of the casing member and providing at least two visual display indications of the status of the switch assembly;

a light source;

a light guide for transmitting light pivotally mounted in the casing member and located between the light source and the display member, and

means for physically displacing the light guide in coordination with the means for varying the electrical conducting state of the circuit whereby the display member is illuminated by the light source to provide a visual display indication of the status of the switch assembly.

4,454,400

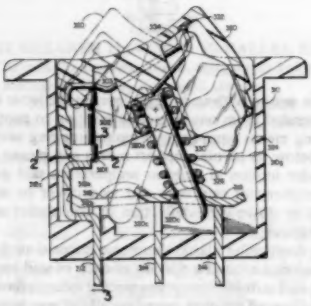
SWITCH CONSTRUCTION

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 328,828, Dec. 9, 1981, Pat. No. 4,347,417. This application Sep. 24, 1982, Ser. No. 423,219

Int. Cl.³ H01H *9/16*

U.S. Cl. 200—315 **12 Claims**



1. An electric switch comprising a case having a cavity with sides and a bottom wall, fixed switch contacts provided in said bottom wall, said case defining actuator support regions, and actuator supported by said case regions for movement between first and second limit positions, a lamp provided in said actuator, a resistor circuit having a conductive abutment portion in said actuator, a movable contact slidably received inside said cavity for movement across the upper ends of certain of said fixed contacts in response to said actuator movement, electrically conductive lost motion means between said actuator and said movable contact to urge the latter toward the upper ends of certain fixed contacts, at least one fixed contact having its upper end spaced above said upper ends of said certain fixed contacts and defining a conductive abutment for engaging said conductive abutment portion of said resistor circuit in said actuator only when the latter is in said first limit position said one fixed contact also having a portion below said conductive abutment for engagement with said movable contact in said second limit position for said actuator.

4,454,401

SAFETY EXTENSION LEVER FOR WALL SWITCH

George S. Powis, Jr., 153 Green St., Lansdale, Pa. 19446

Filed Sep. 13, 1982, Ser. No. 416,914

Int. Cl.³ H01H *15/24*

U.S. Cl. 200—331 **5 Claims**

1. A device for operation of an electric wall switch of the toggle type, comprising: a modified wall plate attachable to an existing toggle switch outlet, said modified plate having an actuating arm or lever slidably mounted within the plate, said arm or lever being provided with an outwardly extending hollow protuberance adapted to overlie and enclose within said hollow the actuating finger of a toggle switch extending outwardly from a wall, said arm or lever having a rod member extending for a desired substantial distance below the bottom edge of the wall plate; said modified wall plate comprising a U-shaped frame formed by upstanding arms and a base forming a vertical slot, upper and lower horizontal cross bars traversing said slot and forming a window frame, narrow fins extending inwardly of said window frame at the front face of said modified wall plate; said arm or lever having an intermediate slide

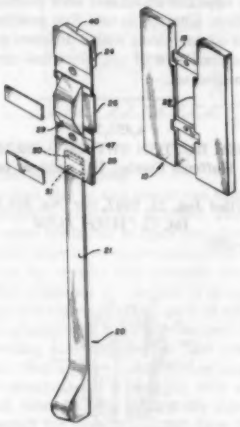


plate abutting said hollow protuberance and arranged to slide on the inner surface of said fins, said arm or lever further having upper and lower slide plates respectively above and below said intermediate slide plate and spaced outwardly therefrom, said intermediate slide plate being on the rear face of said actuating arm and said upper and lower slide plates being on the front face of said arm thereby providing a narrow space between the rear faces of said upper and lower slide plates and the opposed face of said intermediate slide plate at the upper and lower edges of said intermediate slide plate, whereby said upper and lower slide plates are adapted to ride on the outer surface of said modified wall plate during sliding of said arm or lever in the vertical slot.

4,454,402

INDUCTION WELDING APPARATUS FOR LAMINATED TUBES

Engelbert Sander, and Rudolf Jeker, both of Vouvry, Switzerland, assignors to Automation Industrielle SA, Vouvry, Switzerland

Filed Aug. 19, 1981, Ser. No. 294,226

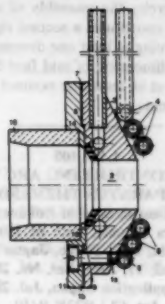
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032118

Int. Cl.³ H05B *6/40*

U.S. Cl. 219—10.53 **9 Claims**

1. Die-welding coil apparatus for connecting a tube body formed of a composite foil having a metallic barrier layer with a tube head, by high-frequency induction welding, comprising a cylindrical shaping die provided with an axial bore, a hollow induction coil which is connectable to a cooling agent source, a shaping die formed of a non-ferrous metal, a radial slot extending between the axial bore and an outer surface of the shaping die and said coil having a plurality of turns surrounding the shaping die and connected electrically conductively with the shaping die by about one turn length, said about one turn length not electrically bridged over the slot whereby a

secondary field flux generated by electrical current passed through said coil includes a secondary field through said axial



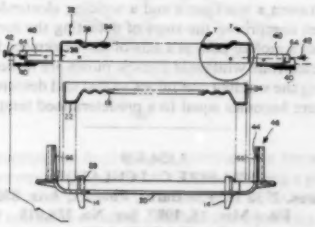
bore is concentrated in a zone of overlap of said tube body and said tube head.

4,454,403

MICROWAVE HEATING METHOD AND APPARATUS

Wesley W. Teich, Wayland, and Kenneth W. Dudley, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 1, 1980, Ser. No. 211,975
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 E **8 Claims**



1. A microwave heating appliance comprising:
a rigid metal sheet having first and second substantially parallel surfaces; and
a layer of silicone having ferrite particulate dispersed therein, said layer being adhered to said first surface for producing heat by absorption of microwave energy, said heat conducting through said metal sheet in sufficient magnitude to cook a food body positioned adjacent to said second surface.

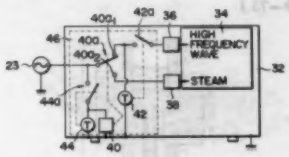
4,454,404

HIGH FREQUENCY HEATING APPARATUS WITH SELECTABLE STEAM GENERATING MEANS

Sadao Zushi, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 37,319, May 9, 1979, abandoned. This application Nov. 24, 1981, Ser. No. 324,570
Claims priority, application Japan, May 10, 1978, 53-54386
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **5 Claims**

1. A microwave heating apparatus comprising:
a housing;
an oven disposed in the housing to receive a foodstuff to be cooked;
an A.C. power source;
a steam generator provided in the housing for supplying steam into the oven;
a microwave generator provided in the housing for radiating microwave energy into the oven; and
control means provided in the housing for controlling the operation of the steam and microwave generators in a user-selected one of three (3) modes (a), (b), and (c) of operation: (a) a first mode wherein only the steam generator is operated, (b) a second mode wherein only the microwave generator is operated, and (c) a third mode wherein



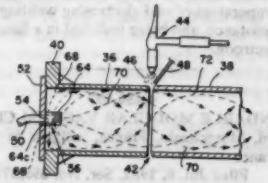
the steam generator and the microwave generator are operated sequentially alternatingly, said control means including a first timer for setting an energization period of time for said steam generator, a second timer for setting an energization period of time for said microwave generator, an on-off switch which is turned on when said second timer is enabled, and a transfer switch connecting said A.C. power source to said steam generator when said first timer is enabled and connecting said A.C. power source to said on-off switch when the first timer is disabled.

4,454,405

WELDING PROCESS AND APPARATUS

Thomas C. Riley, 286B Grant St., Salem, N.J. 08079

Filed Sep. 7, 1982, Ser. No. 415,400
Int. Cl.³ B23K *9/00, 31/06*
U.S. Cl. 219—61 **8 Claims**



1. In a welding procedure for joining adjacent pipe sections by gas arc welding, introducing and blowing an inert gas into the interior of the pipe sections in a substantially high swirling motion and against the interior surface in a wiping motion, the inert gas as so blown, passing from the entry ends, beyond a weld region, to rapidly and substantially completely remove from the pipe sections interior and weld region, any oxygen or deleterious gas or material to permit a clean, rapid welding of the pipe sections in the absence of a build-up of undesired oxidized metal at the weld juncture or any undesired disturbance of the weld pool.

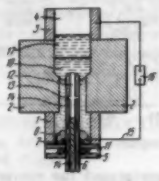
4. Apparatus for facilitating a welding of adjacent pipe sections including means for introduction of an inert gas material into the interior of the pipe sections to be joined by welding, the means including a nozzle mounted in the interior of a pipe section and affixed to a gas inlet tube, said nozzle having a closed end with a plurality of openings, said openings being outwardly spaced from, and disposed at an inclined angle to the longitudinal axis of the cap and pipe section and directed from inlet end to outlet end, and operable to create a swirling or vortical flow path to gas passing therethrough.

4,454,406

METHOD, WELDING FLUX, AND APPARATUS FOR ELECTROSLAG WELDING

Anatoly N. Safonnikov, and Anatoly V. Antonov, both of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

PCT No. PCT/SU80/00107, 371 Date Feb. 23, 1982, 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00016, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 26, 1980, Ser. No. 355,584
Int. Cl.³ B23K 9/18, 25/00
U.S. Cl. 219—73.1 9 Claims



1. A method for electroslag welding of light metals and alloys comprising

establishing a slag bath having a heat capacity sufficient to maintain weld metal in its liquid state for a period of time 10–15% longer than that required to fully degas said weld metal;

fusing an electrode by application of a welding current to produce weld metal in a liquid state;

filling a gap between said light metals and alloys to be welded with said weld metal in a liquid state; and

switching off said welding current.

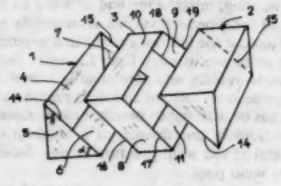
6. An apparatus for electroslag welding at a working temperature comprising a mold with a bottom plate, molding shoes, a welding electrode, said welding electrode inserted through an aperture in a center of said bottom plate, a current lead member and a slag bath, said current lead member comprising a solid material having a melting point greater than said working temperature of said electroslag welding, having a low electrical resistance, and being installed in a fusion zone of said welding electrode.

4,454,407

EXTENDABLE MODULAR VACUUM CHAMBER

Jean Binard, Montchanin, France, assignor to Creusot-Loire, Paris, France

Filed Jul. 6, 1982, Ser. No. 395,377
Claims priority, application France, Aug. 13, 1981, 81 15671
Int. Cl.³ B23K 15/00
U.S. Cl. 219—121 EL 4 Claims



1. Extendable modular vacuum chamber particularly for electron beam welding, comprising

(a) two identical separable parts (1, 2) each constituted by a rectangular horizontal plate (6) and rectangular vertical plate (4) in rigid edge-to-edge attachment thereto, and two lateral plates (5, 7) each in the shape of a right-angled isosceles triangle rigidly attached by their edges forming the sides of the right angle to the corresponding lateral edges of said plates (6, 4) located on either side thereof, whereby, upon assembly, said parts (1, 2) form a first rigid box of parallelepiped shape;

(b) at least one rigid frame (3) for interposition between said parts (1, 2) whereby the assembly of said frame (3) with said parts (1, 2) constitutes a second rigid box of parallelepiped shape having at least one dimension larger than the corresponding dimension of said first box; and

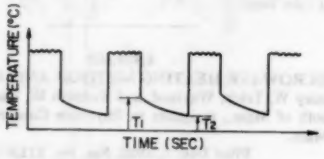
(c) sealing means at at least one contact point between the assembled elements.

4,454,408

METHOD FOR CONTROLLING ARC WELDING AND APPARATUS THEREFOR

Ryoichi Kajiwara, Hitachi; Satoshi Kokura, Hitachiohta; Yuzo Kozono, and Akira Onuma, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,842
Claims priority, application Japan, Jul. 25, 1980, 55-101184
Int. Cl.³ B23K 9/10
U.S. Cl. 219—124.34 14 Claims



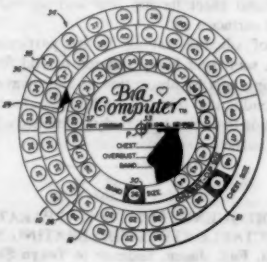
1. In a method of electric arc welding by applying electric pulses between a workpiece and a welding electrode, the improvement comprising the steps of detecting the surface temperature of a molten pool at a side of the workpiece facing the welding electrode while said electric pulses are turned off, and controlling the welding conditions so that said detected surface temperature becomes equal to a predetermined temperature.

4,454,409

BRA-SIZE CALCULATOR

Lynn Sehres, 2730 W. Van Buren, Phoenix, Ariz. 85009

Filed Mar. 15, 1982, Ser. No. 358,018
Int. Cl.³ G06C 1/00
U.S. Cl. 235—78 R 8 Claims



1. A bra size calculator for use in determining the proper bra cup size of a person given that person's chest, overbust, and band or underbust physical measurements comprising:

a first disk having thereon a scalar presentation in numeric sequence of overbust measurements and including a first index position thereon;

a second disk having thereon a scalar presentation in numeric sequence of chest measurements and movably coupled to said first disk and having alphabetical bra cup size indicia alignable with said first index position when a

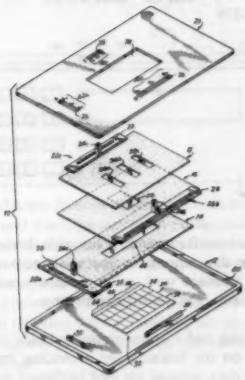
person's overbust measurement on said first disk's scalar presentation is aligned with that person's chest measurement on said second disk's scalar presentation.

4,454,410

MULTI-VARIABLE ANALOG COMPUTER

Milton J. Merl, New City, N.Y., assignor to Marlboro Marketing, Inc., New York, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,605
Int. Cl.³ G06C 3/00
U.S. Cl. 235—89 R **2 Claims**



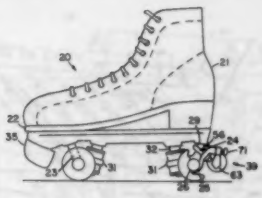
1. Apparatus for displaying a solution to a three variable problem comprising a planar base member having a plurality of answer information bits thereon arranged in a Cartesian grid format of rows and columns, said bits corresponding to the set of solutions to the problem, a first variable selector plate overlying said base and movable in a direction parallel to said columns between a plurality of station locations, each corresponding to a possible assumed value for the first variable, said first selector plate having an aperture located so as to expose a row of information bits corresponding to the subset of solutions for the problem when said first variable takes the value corresponding to said station location, a second variable plate overlying said first variable plate and movable in a direction parallel to said rows between a plurality of station locations each corresponding to a possible assumed value for the second variable, said second variable plate having an aperture located so as to expose three columns of information bits corresponding to the subset of solutions for the problem when said second variable takes the value corresponding to said station location, and a third variable plate overlying said second variable plate and movable in a direction parallel to said rows between a plurality of station locations each corresponding to a possible assumed value for the third variable, said third variable plate having three apertures located so as to expose three columns of information bits corresponding to the subset of solutions for the problem when said third variable takes the value corresponding to said station location such that a single information bit corresponding to the solution to the problem for given values of the three variables appears through each of said apertures when said variable plates are positioned at stations corresponding to said variable values.

4,454,411

ODOMETER MOUNTED BETWEEN ROLLER SKATE WHEELS

William H. Hale, 245 Littleworth Rd., Dover, N.H. 03820, and Robert E. Day, Beauty Hill Rd., Barrington, N.H. 03825

Filed Sep. 7, 1982, Ser. No. 415,169
Int. Cl.³ G01C 22/00
U.S. Cl. 235—95 R **7 Claims**



1. In combination with a roller skate of the type having front and rear wheel assemblies, the rear assembly comprising an inverted T shaped truck, the stem of said truck having an upper portion depending downwardly from the sole plate of the skate and having a lower portion connected to an integral laterally extending axle with a pair of roller skate wheels, each on an opposite end thereof, said stem and axle having an outer face;

an odometer attachment for displaying the distance traveled by said skate;

said attachment being located within the space between said roller skate wheels and including a clamp body having an inner face shaped and dimensioned to tightly fit against the corresponding outer face of said stem and axle of said rear truck and having a pair of shackle holes extending therethrough;

a U shaped shackle, having a pair of threaded legs connected by a curved bight, said bight extending around the stem of said rear truck and said threaded legs each extending through one of said pair of shackle holes in said body;

a pair of threaded nuts, each threaded on one of said threaded legs of said shackle for tightening said clamp body against the stem and axle of said rear truck;

an odometer, mounted on said clamp body, to project in rear of the space between the roller skate wheels of said rear truck, said odometer having a window facing rearwardly; and

means on one of said rear skate wheels for actuating said odometer to count the turns of said one wheel.

4,454,412

ENCODER/ACTUATOR FOR POSTAGE METER

Keith E. Schubert, Rowayton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 108,253, Dec. 28, 1979, abandoned. This application Feb. 1, 1983, Ser. No. 462,733
Int. Cl.³ G07G 1/00
U.S. Cl. 235—101 **6 Claims**

1. In apparatus constructed and arranged for removably mounting interfacing means in operating relationship with respect to a postage meter having a lever movable between a plurality of postage value selecting positions, wherein said interfacing means includes framework and a base, said base having an aperture formed therein and dimensioned to permit pivotal movement of the lever within said aperture when said interfacing means is mounted in said operating relationship, an improvement in the apparatus, said improvement comprising:

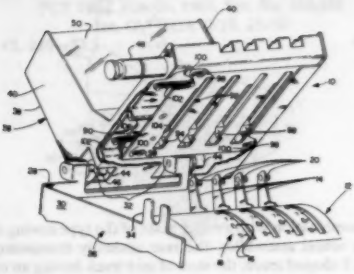
(a) said base movably connected to said framework for movement between a first position wherein said base is normally disposed when said interfacing means is mounted in operating relationship with respect to said postage meter, and a second position to which said base may be moved to facilitate raising said interfacing means

for disposition of said interfacing means out of operating relationship with respect to said postage meter;

(b) spring means interconnecting said base and framework for urging said base into said first position;

(c) said base constructed and arranged for manual movement thereof from said first position to said second position; and

(d) said aperture dimensioned for permitting said base to obstruct passage of said lever through said base when said



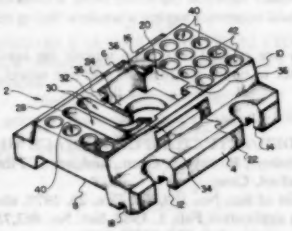
base is disposed in said first position and said lever is located in at least one of said valve selecting positions, and said aperture dimensioned for allowing passage of said lever through said base when said base is disposed in said second position whereby said base and thus said interfacing means may be raised for disposing said interfacing means out of operating relationship with respect to said postage meter.

4,454,413

APPARATUS FOR TRACKING INTEGRATED CIRCUIT DEVICES

William D. Morton, Jr., Santa Clara, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Feb. 19, 1982, Ser. No. 350,245
Int. Cl.³ G06F *17/00*
U.S. Cl. 235—375 **6 Claims**



1. A carrier for retaining and uniquely identifying an integrated circuit chip, comprising:

a carrier body formed from a stiffly flexible material,

a cavity formed within the carrier body for seating the chip with the chip accessible for testing,

resilient retainer means formed integrally with the carrier body and normally blocking access by the chip to the cavity, said retainer means being flexible to a position permitting the chip to be loaded into the cavity, and when released bearing against the chip to retain it within the cavity,

a first array of identification openings extending directly into the carrier body from one side thereof adjacent the cavity,

a second array of identification openings extending directly into the carrier body from the opposite side thereof, each of the openings in the second array being aligned with a respective opening in the first array and separated therefrom by a membrane porton of the carrier body,

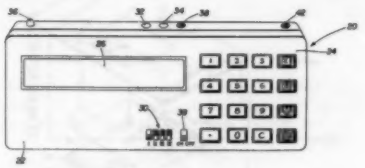
each of said membranes being breakable to enable the transmission of light between its respective identification openings, whereby the carrier may be provided with a unique identification code by breaking a unique combination of membranes to provide a coded array of light transmission paths through the carrier body.

4,454,414

FUNDS TRANSFER SYSTEM USING OPTICALLY COUPLED, PORTABLE MODULES

William M. Benton, Ft. Lauderdale, Fla., assignor to Vericard Corporation, Fort Lauderdale, Fla.

PCT No. PCT/US82/00421, 371 Date Jun. 16, 1982, 102(e) Date Jun. 16, 1982, PCT Pub. No. WO83/03694, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 5, 1982, Ser. No. 391,599
Int. Cl.³ G06F *15/30*
U.S. Cl. 235—379 **13 Claims**



1. In a funds transfer system, a portable device for transferring transaction data among members, wherein each member is authorized to transact with other members within preestablished credit limits, the device comprising:

a housing;

data processing and storage circuitry inside said housing;

a keyboard on the housing for providing transaction data and other data entered via said keyboard by a member to said data processing and storage circuitry;

an optical transceiver means exposed through the housing for providing bidirectional transaction data to said data processing and storage circuitry; and

alignment means for positioning said housing relative to a housing of a second similar portable device such that said optical transceiver means is in alignment with an optical transceiver means of said second portable device.

4,454,415

TRACKING MIRROR ASSEMBLY AND CONTROL SYSTEM FOR AN OPTICAL DATA STORAGE DISC

Ashok B. Nayak, La Verne, and Leonard Laub, Pasadena, both of Calif., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 30, 1981, Ser. No. 279,099
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **7 Claims**

1. Apparatus for reading information stored in a track pattern on a radiation reflecting record comprising:

a source of radiation for supplying at least a reading beam;

a tracking mirror assembly disposed in the optical path of the reading beam and controllable for directing said reading beam in a radial direction on said record;

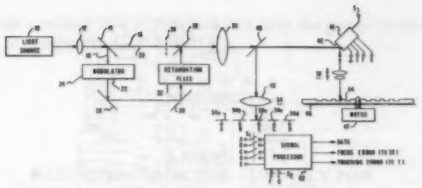
an objective lens means for passing said reading beam to said record and for controllably focusing said reading beam at a plane of focus;

a photodetector array disposed in an optical path which includes said objective lens means, said photodetector array comprising a data photodetector disposed for impingement thereon of said reading beam for sensing said stored information and at least a first paired photodetector array adjacent to said data photodetector, said paired

photodetector array including separated sectors for sensing relative differences of said reading beam impinging on said sectors to provide at least tracking error correction signals to said tracking mirror assembly;

detenting means associated with said tracking mirror assembly for providing optical detenting of said tracking mirror assembly during a slewing mode of operation;

said optical detenting means comprising at least a second



source of radiation fixed in place relative to an undeflected position of said tracking mirror and a second paired photodetector array associated with said second source for detecting movement of said tracking mirror from its undeflected position; and

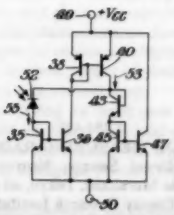
means coupled from the output of said second photodetector array to said tracking mirror assembly for providing error correction signals for maintaining the detent condition during slewing.

4,454,416

PHOTO-ELECTRIC CIRCUIT EMPLOYING CURRENT MIRRORS

Walter S. Gontowski, Jr., Thompson, Conn., and Edward Chalfin, Shrewsbury, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 13, 1982, Ser. No. 339,032
Int. Cl.³ H01J 40/14; H03F 3/60
U.S. Cl. 250—214 A **3 Claims**



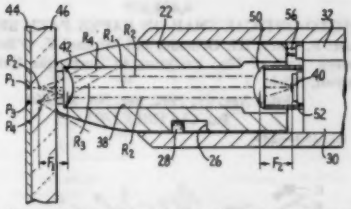
1. A stable photo-electric device comprising: a photo diode; and a current-mirror amplifier including a first and third stage each employing one-polarity-type transistors and including an intermediate second stage employing the other-polarity-type transistors, said photo diode being connected between the input of said first stage and the input of said third stage in the polarity tending to reverse bias said photo diode.

4,454,417

HIGH RESOLUTION LIGHT PEN FOR USE WITH GRAPHIC DISPLAYS

George A. May, R.R. 1, E. Sooke Rd., Sooke, British Columbia, Canada V0S 1N0, assignor to George A. May, Sooke, Canada ada

Filed Feb. 5, 1982, Ser. No. 346,368
Int. Cl.³ G06K 9/00
U.S. Cl. 250—216 **13 Claims**



13. A light pen having an end adapted to be abutted against a video screen for detecting the presence of an illuminated pixel located adjacent the abutting end of the pen, comprising:

an elongated housing having opposed front and rear ends and formed with a hollow channel extending therethrough;

a radiation detection device mounted in said housing adjacent the rear end of said channel;

lens means mounted within said channel adjacent the front end thereof, said lens means having a focal length such that when the front end of said pen abuts against the screen, radiation from an illuminated pixel located near the axis of the channel is transmitted along the axis of the channel in a collimated beam to said detection device, while the radiation received from pixels displaced from the axis is directed by said lens towards the sides of the elongated channel and dissipated, whereby said detection device functions to detect the on-axis pixels to the exclusion of the off-axis pixels; and

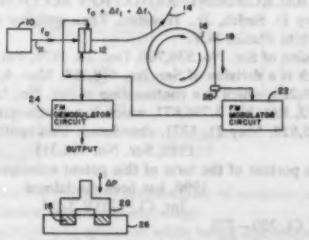
a second lens means disposed adjacent to the rear end of the channel for focusing the axially directed radiation directly onto said radiation detection device.

4,454,418

INTEGRATED OPTICS TRANSDUCER

Clifford G. Walker, 915 Weatherly Rd., Huntsville, Ala. 35803

Filed Apr. 26, 1982, Ser. No. 371,867
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 **8 Claims**



1. A transducer comprising: a laser for generating a beam of coherent light, a photodetector, a photoelastic optical waveguide means disposed between said laser and said photodetector for providing an optical path for said beam of light therebetween, stress transfer means disposed adjacent to said wave-

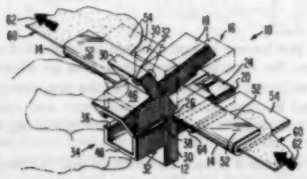
guide means for subjecting a portion of said waveguide means to stress forces, modulating means disposed for modulating said beam of light prior to its passage through said waveguide means, and feedback means responsive to said photodetector for providing a variable voltage feedback to said modulating means in response to said stress forces, said variable voltage feedback being indicative of said stress forces and said waveguide means comprising an input waveguide, an output waveguide, and a ring resonator waveguide therebetween, said stress forces being applied to said ring resonator.

4,454,419

PHOTO-OPTICAL SNAP-ON PAPER PATH SENSOR

Emmett B. Peter, III, Orlando, and Michael K. O'Brien, Melbourne, both of Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 21, 1982, Ser. No. 370,398
Int. Cl.³ H01J *5/02*
U.S. Cl. 250—239 **8 Claims**



1. A snap-on photo-optical item position sensor comprising:
a unitary, semi-rigid, slightly flexible member having oppositely disposed elongated parallel leg portions;
the terminal end of each of said leg portions including photo-optical means for sensing the passage therebetween of a moving item;
the opposite end of said semi-rigid yet flexible member being provided with an open, rectangular receptacle including oppositely disposed parallel slots to receive a plug member for applying electrical potential to said photo-optical means for sensing items;
the area of said semi-rigid member intermediate the leg portions and said receptacle being undercut sufficiently so as to permit the parallel leg portions to be slightly separated upon application of pressure to opposite sides of the slotted receptacle enabling the semi-rigid member to be received and snapped over an item pathway or track.

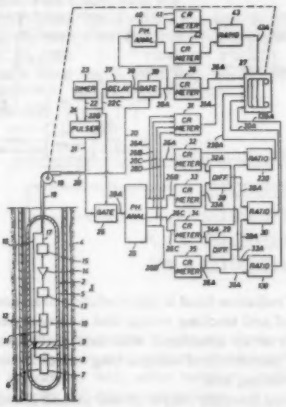
4,454,420

NEUTRON-INELASTIC GAMMA RADIATION WELL LOGGING METHOD AND APPARATUS WITH BACKGROUND RADIATION ACCOUNTED FOR

Harry D. Smith, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 536,700, Dec. 26, 1974, Pat. No. 4,381,449, which is a division of Ser. No. 448,091, Mar. 4, 1974, Pat. No. 3,946,226, which is a continuation of Ser. No. 322,573, Jan. 10, 1973, Pat. No. 3,796,877, which is a continuation of Ser. No. 145,815, May 21, 1971, abandoned. This application Jun. 8, 1982, Ser. No. 386,315
The portion of the term of this patent subsequent to Apr. 26, 1990, has been disclaimed.
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—270 **26 Claims**

1. A method for observing earth formation properties comprising the steps of:
irradiating an earth formation with pulses of high energy neutrons;
detecting over a wide energy band the gamma radiation produced by the inelastic scattering of said neutrons by nuclei of the earth formation elements during the time interval commencing after the initiation of each neutron pulse and terminating before thermal neutron absorption gamma radiation becomes predominant and generating signals in response thereto;
providing a first output signal responsive to detector signals produced by gamma rays from said inelastic scattering over a selected, broad energy band;
deriving from said first output signal a first indicating signal as a functional indication of carbon in said formation;
deriving from said first output signal a second indicating signal as a functional indication of oxygen in said formation;
deriving and recording a ratio of said first and second indicating signals as a functional representation of the hydrocarbon content of said formation;



detecting gamma rays during a second observation interval occurring substantially subsequent to said neutron pulse and in which capture gamma radiation predominates;
providing a second output signal responsive to detector signals produced by detected capture gamma radiation;
deriving from said second output signal a third indicating signal as a functional indication of calcium in said formation;
deriving from said second output signal a fourth indicating signal as a functional indication of silicon in said formation; and
deriving and recording a ratio of said third and fourth indicating signals as a functional representation of the lithology of said formation.

4,454,421

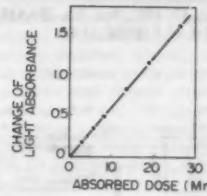
APPARATUS FOR MEASURING RADIATION DOSE

Ryuichi Tanaka; Hiromi Sunaga; Naoyuki Tamura, all of Gunma, and Toshio Murakami, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Sep. 18, 1981, Ser. No. 303,708
Claims priority, application Japan, Sep. 24, 1980, 55-132671
Int. Cl.³ G01J *1/00*; G01N *5/00*
U.S. Cl. 250—336.1 **1 Claim**

1. In an apparatus for measuring radiation dose using change in light absorbance of a transparent material upon irradiation which comprises a hollow cathode lamp light source, a monochromatic light emmiting unit, a unit for controlling the light

amount, a sample mounting unit, a detection unit and an indication unit wherein said hollow cathode lamp light source includes a cathode of a material selected from the group consisting of manganese and lithium.



4,454,422

RADIATION DETECTOR ASSEMBLY FOR GENERATING A TWO-DIMENSIONAL IMAGE

Dennis E. Persyk, Barrington, Ill., assignor to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Jan. 27, 1982, Ser. No. 343,207
Int. Cl.³ G01T *1/20, 1/18*
U.S. Cl. 250—363 S **8 Claims**

1. A radiation detector assembly, comprising in combination:

(a) a scintillator substance for receiving radiation to be detected and for emitting scintillation light in response to said received radiation;

(b) a photo-cathode for receiving said scintillation light from said scintillator substance and for releasing photo-electrons in accordance therewith, whereby scintillation light photons generated by a single radiation quantum generally release a packet of photo-electrons;

(c) an electron multiplier for multiplying the number of said photo-electrons, said electron multiplier having an input for receiving said photo-electrons from said photo-cathode and an output for emitting multiplied photo-electrons, whereby each received packet of photo-electrons defines an impingement area on said input;

(d) sensor means having an input area for receiving said multiplied photo-electrons from said electron multiplier, said sensor means determining the impingement location of said packet of multiplied photo-electrons on said input-area;

(e) a grid positioned between said photo-cathode and said input of said electron multiplier; and

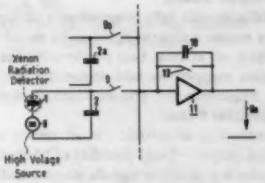
(f) means for applying an electrical potential in the range of 1 to 300 volts to said grid such that each packet of photo-electrons generated in said photo-cathode is spread laterally as it passes from said photo-cathode to said electron multiplier, thereby enlarging the impingement area of said packet of electrons on said input of said electron multiplier.

4,454,423

CIRCUIT ARRANGEMENT FOR A RADIATION DETECTOR

Lothar Koob, Roettenbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,834
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3116072
Int. Cl.³ G01T *1/16*; H03F *3/70*
U.S. Cl. 250—374 **2 Claims**



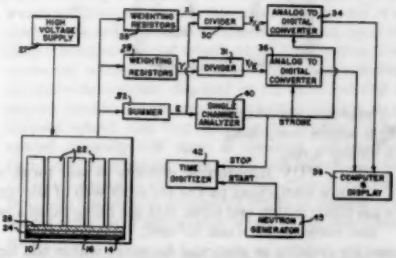
1. A circuit arrangement comprising a radiation detector for the conversion of radiation into corresponding electric signals, an integrator circuit for connection with the radiation detector to receive the detector output signal, said integrator circuit comprising a capacitance for directly integrating the output signal of the radiation detector to generate a measure of the radiation incident on the detector, a charge amplifier for selective coupling with said capacitance, and, between the capacitance and said charge amplifier, essentially only a switch being connected for the transmission of the charge of the capacitance to the charge amplifier.

4,454,424

NEUTRON POSITION-SENSITIVE SCINTILLATION DETECTOR

Michael G. Strauss, Downers Grove, and Raul Brenner, Woodridge, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1981, Ser. No. 307,032
Int. Cl.³ G01T *3/06*
U.S. Cl. 250—390 **9 Claims**



1. An apparatus for mapping distributions of neutron positions in a scintillation detector comprising:

a scintillator sensitive to neutrons while being insensitive to gamma rays, said scintillator having a polished face, a predetermined index of refraction, and a detection efficiency for thermal neutrons at least 1000 times greater than its detection efficiency for 1 Mev gamma rays, said scintillator emanating light flashes at points of neutron interactions therewithin;

a plurality of photomultiplier means arranged to form an array and positioned to receive the light flashes of said

scintillator, each of said photomultiplier means producing an output electronic signal proportional to the amount of light received by said photomultiplier means;

light coupler means having an index of refraction approximately equal to said predetermined index of refraction of said scintillator, said light coupler means spacing said scintillator from said photomultiplier means;

light concentrator means having an index of refraction lower than the indices of refraction of said scintillator and said light coupler means, disposed between and immediately adjacent said polished face of said scintillator and said light coupler means;

said scintillator, said light concentrator means and said light coupler means cooperating so as to direct flashes of said scintillator on at least two photomultiplier means in any dimension mapped by said apparatus; said light coupler means dispersing the concentrated flashes of said light concentration means;

position encoding electronic circuit means coupled to the electrical outputs of said plurality of photomultiplier tubes for producing position signals corresponding to coordinates of the position of each light flash; and

means for interpolating said photomultiplier tube signals to determine the position of said light flash whereby the position of said neutron interaction in said scintillator is determined.

4,454,425

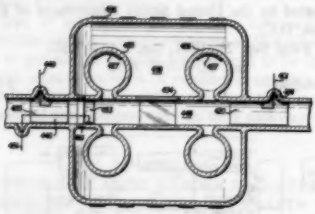
PHOTOIONIZER

Robert A. Young, 9773 Variel Ave., Chatsworth, Calif. 91311

Continuation-in-part of Ser. No. 259,230, Apr. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 238,275, Feb. 25, 1981, Pat. No. 4,377,749. This application Jun. 2, 1983, Ser. No. 500,644

Int. Cl.³ H01J *27/00*

U.S. Cl. 250—423 P **5 Claims**



1. A photoionizer comprising

a light source comprising

a hollow torus;

a UV or VUV transmitting window in said torus, said window comprising part of the inner wall of said torus;

a gas filling within said torus, said gas filling being a pressure between 10^{-3} and 10^{3} torr;

means for creating an electrical discharge within said torus;

means for passing a preselected gas sample through a passage in said torus;

electrode means within said passage through said torus for collecting or extracting the ions and electrons produced by the light from said light source striking said gas sample;

means connected to said means within said passage for measuring the ions and electrons collected by said electrode means; and

means adjacent said passage for preventing surface currents along the surface of said hollow torus from reaching said electrode means.

4,454,426

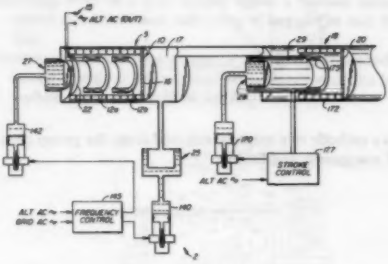
LINEAR ELECTROMAGNETIC MACHINE

Glendon M. Benson, Danville, Calif., assignor to New Process Industries, Inc., Minneapolis, Minn.

Filed Aug. 17, 1981, Ser. No. 293,825

Int. Cl.³ H02K *33/00*

U.S. Cl. 290—1 R **17 Claims**



1. A linear electromagnetic machine comprising:

means defining a stator;

a coil mounted on said stator;

a reciprocating element having permanent magnet material with magnetized segments of alternating polarity so that reciprocation of said element relative to said stator in an axial direction causes periodic flux reversal through said coil to induce an alternating voltage therein, said magnetized segments being of equal axial extent and being axially spaced by transitional regions that are of axial extent substantially less than that of said magnetized segments; and

flux return means associated with said stator for providing a relatively low reluctance magnetic path for flux lines resulting from the magnetization of said permanent magnet material wherein the reluctance is generally independent of the position of said reciprocating element.

4,454,427

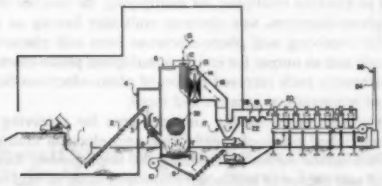
INCINERATOR AND FUME SEPARATOR SYSTEM AND APPARATUS

Leon Sosnowski, and Thaine Mathewson, both of 62 Wegman St., Auburn, N.Y. 13021

Filed Nov. 10, 1981, Ser. No. 320,114

Int. Cl.³ F01N *3/04*

U.S. Cl. 290—2 **33 Claims**



1. A process for producing the steam to heat establishments or to generate electricity by incinerating combustible materials such as trash, sewage, tire chips or coal and mixtures thereof in a furnace, while purifying the acidic exhaust gases produced from the combustion of such materials, comprising feeding the combustible materials into a furnace wherein said materials are burned at temperatures up to about 1800° F.; passing the gaseous products of combustion from such burning operation as contaminated exhaust gases over water-containing boiler tubes

located within the furnace for generating steam from such boiler tubes to be tapped off for heat or electricity generating purposes; passing the contaminated exhaust gases through a water-cooled economizer; directing the exhaust gases through a water-cooled horizontal conduit closed at the downstream end thereof wherein the gas is passed through a series of baffles and fly ash settling chambers, whereby the larger particulate waste materials in the exhaust gases are preliminarily removed; passing the contaminated exhaust gases along said water-cooled horizontal conduit and through a plurality of acid and alkaline resistant fume separators spaced along the length of the conduit and having inlets connected to the conduit, whereby the acidic exhaust gases are introduced into the fume separators through said inlets at high velocity and are mixed with an alkaline liquid introduced into said separators from an alkaline source to neutralize any acidic materials and to remove any smaller particles which may remain in the exhaust gases; each of said fume separators being composed of a container, a gas exhaust inlet, a rotary shaft centrally disposed within said container and means to rotate said shaft, a ribbed slinger attached to the upper portion of the shaft and having a bowl-shaped solid disc with ribbed portions located within and protruding upwardly from the interior of the disc with a rotary shaft extending approximately through the center of the disc and the outer periphery of the disc in close proximity to the interior of the container, a centrifugal fan having the blades curved in the direction opposite to the direction of the rotation of the fan, said fan being attached to the lower portion of the shaft below the ribbed slinger, a conical open ended device connected to the walls of the fume separator means, which device is located underneath the ribbed slinger with the smaller end of the cone directed towards the center of the fan so as to funnel the contaminated exhaust gas-alkaline liquid mixture into the center of the fan, liquid baffle means around said fan, a drain at the bottom of said fume separator below said baffle means and having a drain exit therein, and a central opening in the bottom of said container to emit the purified exhaust gas, said fume separator forming three distinct gas purification zones when the shaft is rotating at high velocity in which the contaminated exhaust gases are successively treated and purified in the following zones:

(A) a contact zone in which the exhaust gas is introduced at the gas inlet and propelled downward in a cylonic flow due to the relative movements of the ribbed slinger and centrifugal fan and wherein the exhaust gas is intimately mixed with an alkaline liquid introduced into the fume separator such that it contacts the ribbed slinger disc located below the exhaust gas inlet, whereby the liquid is broken up into fine droplets by the propelling and shearing action of the rotating ribbed slinger as the shaft is rotated; said slinger propelling the liquid perpendicular to the cyclonic downward flow of the exhaust gases so as to increase the contact time and insure intimate contact between the alkaline liquid and the contaminated exhaust gases;

(B) a venturi zone located underneath the ribbed slinger caused by the downward pull of the gas by the centrifugal fan, said gas passing between the periphery of the spinning slinger and the interior walls of the container where it is funneled into a conical shaped container underneath the ribbed slinger to form a venturi turbulent zone due to the increased velocity of the gas, thereby insuring even more complete contact between the tiny droplets of solution and exhaust gases; and

(C) a final separation zone wherein the alkaline liquid and contaminated gaseous mixture are directed from the conical shaped device into the center of the centrifugal fan located underneath the ribbed slinger, whereby the movement of the centrifugal fan drives the exhaust gas from the center of the fan through the blades forcing the remaining contaminants in the exhaust gas to be captured and neutralized by the alkaline liquid and directing the liquid against the baffle means and onto the wall of the fume separator container to separate the liquid from said mixture, which liquid is collected in a drain trough located beneath said baffle means and removed through the drain exit and wherein the purified gases are passed out of the separator through the central opening in the bottom of the fume separator.

4,454,428

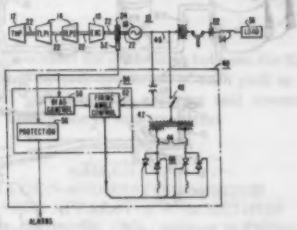
NOISE REDUCTION MEANS FOR A DYNAMIC STABILIZER FOR SYNCHRONOUS MACHINES HAVING TORSIONAL OSCILLATIONS AND METHOD

Donald S. Kimmel, Monroeville, and William H. South, McKeesport, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 22, 1981, Ser. No. 285,886

Int. Cl.³ H02P 9/04; H02H 7/06

U.S. Cl. 290—40 R **3 Claims**



1. An electrical power generating system, comprising:

(a) an alternating current electrical generator which is capable of generating electrical power of generally nominal fixed frequency and generally nominal fixed voltage amplitude at output terminals thereof and supplying said power to a load, said generator having a rotor of predetermined mass;

(b) energy supply means for driving said rotor to thereby generate said power, said energy supply means having a rotatable portion of predetermined mass;

(c) resilient shaft means interconnecting said rotor and said energy supply means rotatable portion, the rotational velocity of said shaft means being capable of changing periodically in relation to torsional oscillation in said resilient shaft means thus causing said nominal fixed amplitude of said electrical voltage to be modulated in relation to said periodic change of said shaft velocity;

(d) speed sensing means disposed in relationship to said shaft means sufficient to measure said rotational velocity of said shaft means and to provide an electrical output signal at an output terminal thereof which signal is indicative of said rotational velocity, said speed sensing means including a toothed wheel rigidly disposed on the shaft and first and second transducers mounted in close proximity to said toothed wheel, said first and second transducers being spaced generally 180° apart in opposing relationship to each other, said output signal from said transducers being fed into a summing amplifier, said summing of said output from said transducers eliminating the noise portion of said output signal from said sensing means due to wheel eccentricity;

(e) compensating means responsive to said output signal from said speed sensing means for compensating for said modulation of said electrical power by said torsional oscillation to thereby generally provide electrical power of said nominal fixed frequency and said nominal fixed voltage amplitude to said load; and

(f) signal conditioning means disposed between said speed sensing means and said compensating means for filtering the noise frequencies from the speed sensing signal while passing the frequencies of the speed sensing signals that are indicative of said torsional oscillations to said compensating means, said signal conditioning means includes a

phase-locked loop FM demodulator and a level shifter and a high-pass filter in series relationship disposed between the output of each of said first and second transducers and the input of said summing amplifier

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4,454,429

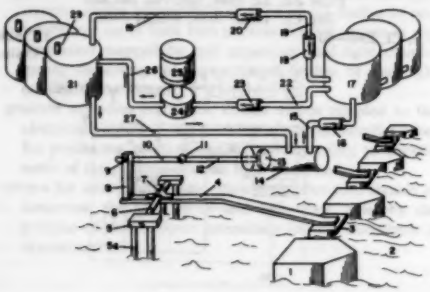
METHOD OF CONVERTING OCEAN WAVE ACTION INTO ELECTRICAL ENERGY

Frank Buonome, 196 High St., East Haven, Conn. 06512

Filed Dec. 6, 1982, Ser. No. 299,053

Int. Cl.³ F03B *13/12, 13/10*

U.S. Cl. 290—53 **6 Claims**



1. An apparatus for converting water motion to electrical energy, which comprises:

(a) a water motion magnifier means;

(b) a float responsive to water motion whose reciprocating up and down movement is converted by a connecting means to a horizontal in and out movement which drives a piston in a long horizontally mounted cylinder;

(c) an accumulator means connected to a reservoir means by two pathways, by a metering valve, a check valve and a return line and by a regulator valve, a turbine and a hydraulic pressure line;

(d) means to convert the turbine output to electrical energy.

4,454,430

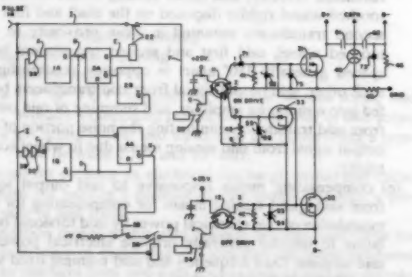
UNIVERSAL CONTROL GRID MODULATOR

Daniel G. Miller, Randallstown, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,807

Int. Cl.³ H03K *5/04, 7/08, 17/687*

U.S. Cl. 307—265 **7 Claims**



1. A modulator for a high voltage electron tube having a control grid, said modulator comprising a high voltage portion, a low voltage portion, and first and second transformers coupling the high and low voltage portions;

said first and second transformers each having a primary winding and at least one secondary winding, each winding having a very low number of turns;

said high voltage portion comprising first and second transistors which are high voltage field effect transistors each having a source, a drain and a gate, one secondary winding of each of the first and second transformers being connected respectively to input circuits between the gate and the source of said first and second transistors, a diode being connected between the first transformer and the gate in the input circuit of the first transistor so that an on drive pulse applied via the first transformer charges the gate capacitance of the first transistor to bias it on, the charge being held by the diode, the source and drain of the first transistor being connected so that when the first transistor is on, bias is applied to the control grid for turning on the electron tube; off-drive means including the second transistor coupled between the second transformer, the first transistor, and the electron tube circuit so that responsive to an off-drive pulse at the second transformer the first transistor and the electron tube are turned off; and means connected to maintain off bias on the control grid during off times; said low voltage portion comprising on-control means and off-control means coupled between a source of input pulses and the primary windings of said first and second transformers, the on-control means comprising initial means responsive to the beginning of an input pulse to substantially immediately apply an on-drive pulse of short duration via the first transformer, and regeneration means having timing means with a given time interval for generating, via the first transformer repeated on-drive pulses spaced by said given time interval for the duration of the input pulse; the off-control means comprising means responsive to the trailing edge of an input pulse to apply an off-drive pulse of short duration via the second transformer.

4,454,431

SEMICONDUCTOR CIRCUIT WITH A CIRCUIT PART CONTROLLED BY A SUBSTRATE BIAS

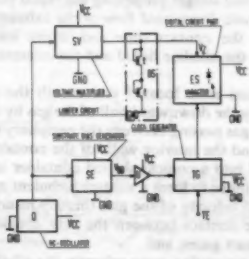
Kurt Hoffmann, Taufkirchen, and Dieter Kantz, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,197

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009303

Int. Cl.³ H03K *17/22, 17/06, 17/10*

U.S. Cl. 307—296 R **4 Claims**



1. Semiconductor circuit, comprising an operating potential source, a reference potential source, a digital circuit part connected to said potential sources, a clock generator connected to said circuit part and to said potential sources, an oscillator connected to said potential sources, a voltage multiplier connected to said potential sources and connected to and controlled by said oscillator, a connection between said voltage multiplier and said digital circuit part for feeding a supply voltage to said digital circuit part being higher than the volt-

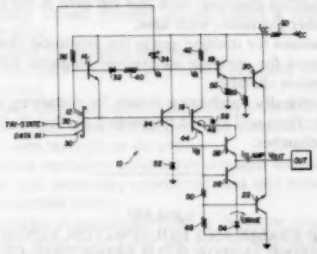
ages provided by said potential sources, a limiter circuit formed of MOS transistors connected between said reference potential source and said connection between said voltage multiplier and said digital circuit part, a substrate bias generator connected between said potential sources and to said oscillator for supplying a substrate bias having a given full value, and a converter connected to said potential sources and connected between said substrate bias generator and said clock generator for receiving said substrate bias from said substrate bias generator and for passing on said substrate bias to said clock generator, said clock generator and said digital circuit part being activated when said substrate bias reaches said given full value.

4,454,432

POWER EFFICIENT TTL BUFFER FOR DRIVING LARGE CAPACITIVE LOADS

Grady M. Wood, Melbourne, Fla., assignor to Harris Corp., Melbourne, Fla.

Filed Sep. 9, 1981, Ser. No. 300,617
Int. Cl.³ H03K *19/088, 19/013*
U.S. Cl. 307—456 **24 Claims**



1. In a TTL gate comprising a power supply for supplying collector current to said gate, input means for receiving an input signal, output means responsive to said input signal for providing logic high and low level outputs from said gate at an output node, and drive means connected between said input means and said output means for driving said output means with said collector current, the improvement comprising:

feedback means, connected between an output of said drive means and said output means, for altering the response of said drive means to substantially reduce said collector current from said power supply when said output node reaches said logic low output level.

4,454,433

MULTIPLIER CIRCUIT

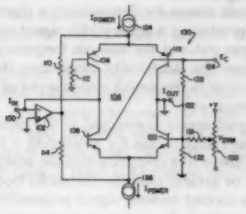
David R. Welland, Boston, Mass., assignor to DBX, Inc., Newton, Mass.

Filed Aug. 17, 1981, Ser. No. 293,470
Int. Cl.³ G06G *7/12, 7/24;* **H03G** *3/20, 3/30*
U.S. Cl. 307—493 **7 Claims**

1. In a signal multiplier of the type comprising an operational amplifier and a gain cell connected to said amplifier, said gain cell having an input terminal for receiving an input signal and a control signal terminal for receiving a control signal,

said gain cell comprising two signal processing paths respectively for the positive and negative portions of said input signal, and means for coupling said control terminal to each of said paths, each of said paths including (a) at least one first transistor for providing a log signal as a logarithmic function of the corresponding portion of the input signal and (b) a corresponding at least one second transistor coupled to said first transistor for providing an antilog signal as an antilogarithmic function of the algebraic sum of said log signal and said control signal, the improvement comprising

means coupled to said control terminal for generating a correction signal as a function of said control signal so as



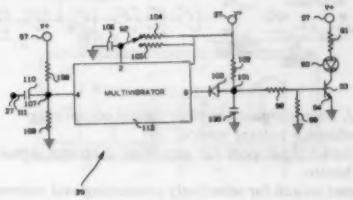
to substantially correct for differences between the Early effects exhibited by said transistors of each path as said control signal varies and for applying said correction signal to the base of one of said transistors.

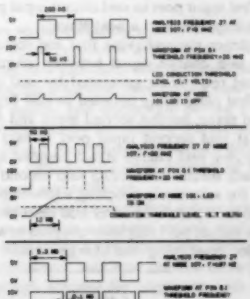
4,454,434

CALIBRATION AND STATUS MONITOR COMPARATOR APPARATUS AND METHOD

Starnes E. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 99,272, Dec. 3, 1979, Pat. No. 4,327,523.
This application Dec. 2, 1981, Ser. No. 326,778
Int. Cl.³ H03K *9/06, 5/26*
U.S. Cl. 307—523 **3 Claims**





1. Apparatus comprising:

pulse generating means having an analysis frequency input, a timing circuit input, and a pulse output, and operable for producing an output pulse at the pulse output responsive to an edge of an input pulse at the analysis frequency input, said output pulse having a duration determined by a pulse width signal appearing at the timing circuit input;

analysis frequency source means for producing an analysis frequency;

first means for electrically connecting the analysis frequency source means to the analysis frequency input of the pulse generating means;

timing circuit means for determining a threshold frequency and for producing a pulse width signal output responsive to an input pulse at the analysis frequency input;

second means for electrically connecting the timing circuit means output to the timing circuit input of the pulse generating means; and

sensible signal means connected to the pulse output of the pulse generating means for producing a first sensible signal responsive to a condition that the analysis frequency is equal to or greater than the threshold frequency, for producing a second sensible signal responsive to a condition that the analysis frequency is approaching, but less than the threshold frequency, and for producing a third sensible signal reponsive to a condition that the analysis frequency is well below the threshold frequency.

4,454,435

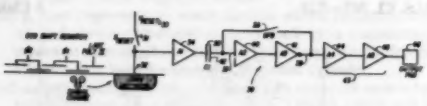
CCD AMPLIFIER USING SECOND CORRELATED SAMPLING AND NEGATIVE FEEDBACK FOR NOISE REDUCTION

Darrell M. Burns, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 7, 1981, Ser. No. 290,749

Int. Cl.³ H03K *3/013, 17/16;* **H03F** *1/26*

U.S. Cl. 307—530 **2 Claims**



1. A charge signal amplifier circuit comprising:

a reference voltage source;

a circuit input port for accepting a charge signal applied thereto;

a reset switch for selectively connecting said reference voltage source to said circuit input port;

a first stage, having first input and output ports, coupled at said first input port to said circuit input port for presenting a low impedance to a next stage;

a capacitance means having first and second plates for coupling said charge signal between stages and for storing thermal reset noise generated by said circuit input port, said first plate being coupled to said first output port;

a second stage, having second input and output ports, coupled at said second input port to said second plate for amplifying said charge signal coupled thereto;

a feedback means connecting said second input and output ports for selectively coupling a low-impedance voltage to said second plate whenever said reset switch is closed; and

a circuit output port amplifier coupled to said second output port for amplifying said charge signal.

4,454,436

DISC-SHAPED M.H.D. GENERATOR

Anthony J. Last, Oakville, and John D. Chato, Nelson, both of Canada, assignors to B O Development Enterprises Ltd., Vancouver, Canada

Filed Jun. 21, 1982, Ser. No. 391,956

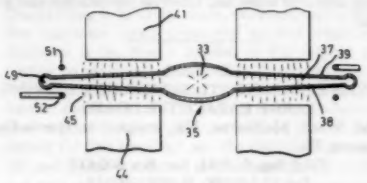
Int. Cl.³ H02N *4/02*

U.S. Cl. 310—11 **24 Claims**

1. A magneto-hydrodynamic generator utilizing pulsating combustion comprising:

first means defining a central combustion chamber and a radial expansion chamber annularly surrounding the combustion chamber and communicating therewith, the expansion chamber being defined between two opposing walls which converge in the direction away from the combustion chamber in order to preserve a substantially constant cross-sectional area at increasing radii, and thus preserve the volumetric requirement of an expanding shock wave,

second means for introducing a combustible fuel mixture into the combustion chamber,



third means for initiating pulsating combustion within said combustion chamber, such that gas flow in the expansion chamber fluctuates with time,

fourth means for ionizing gas in the expansion chamber,

fifth means for applying an external magnetic field to the expansion chamber,

and electrically conductive means for extracting electrical power from said ionized fluctuating gas flow in the expansion chamber.

4,454,437

STATOR FRAME AND HOUSING FOR VENTICULAR STARTING MOTOR WITH REDUCTION GEARS

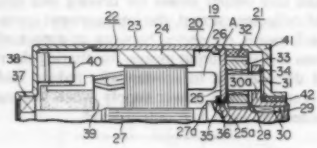
Toshinori Tanaka, and Akira Morishita, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 12, 1982, Ser. No. 433,707

Claims priority, application Japan, Oct. 30, 1981, 56-163440

Int. Cl.³ H02K *7/10*

U.S. Cl. 310—83 **1 Claim**

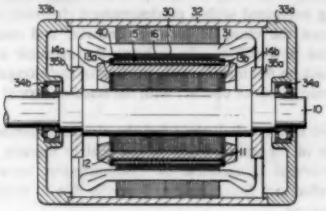


1. In a permanent magnet type starting motor equipped with reduction gears; the combination comprising: a stator frame for said starting motor including a unitary tubular member having a bottom portion, an armature located within said tubular member having a rotary shaft extending into a penetrating hole provided in said bottom portion of said tubular member, in a manner to protrude beyond said penetrating hole to a forward region, a rear bracket assembly fastened to said tubular member spaced from said bottom portion, said assembly including a bearing for said armature rotary shaft and a member contacting a sliding-contact engagement portion of said armature to hold said bottom portion of said stator frame and said rotary shaft of said armature in engagement in an axial direction, a housing fastened to said bottom portion in said forward region, and said reduction gears being connected to be driven by said rotary shaft of said armature and installed in said housing in said region forward of said bottom portion.

4,454,438
SYNCHRONIZED INDUCTION MOTOR

Seizi Yamashita, Katsuta; Kunio Miyashita, Hitachi; Syoji Tanabe, and Tadao Shimotsu, both of Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 969,180
Claims priority, application Japan, Dec. 14, 1977, 52/149356
Int. Cl.³ H02K 21/12
U.S. Cl. 310—162 1 Claim

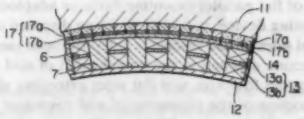


1. A synchronized motor comprising:
(a) a stator including an armature core having an armature winding wound thereon for generating a rotating magnetic field;
(b) a casing for housing said stator;
(c) a rotor shaft concentrically arranged axially of said armature core;
(d) a rotor core mounted concentrically with said rotor shaft on said rotor shaft and magnetically coupled to said armature core through an air gap;
(e) starting secondary conductors arranged within said rotor core, said secondary conductors and said stator forming an induction motor;
(f) a permanent magnet mounted in the outer circumference of said rotor core along the axis of said rotor shaft for forming a synchronous motor in cooperation with said stator, said permanent magnet having a predetermined coercive force such that the permanent magnet is not demagnetized by a rotating magnetic field in the air gap generated when the motor is operating as the induction motor, said permanent magnet having the coercive force of no less than 15 K oersteds; and
(g) a reinforcing member mounted around an outer circumference of said permanent magnet, said reinforcing member being welded to said permanent magnet at interpole points.

4,454,439
AIR GAP WINDING ROTATING ELECTRIC MACHINE

Kouichi Okamoto; Mitsuhiro Uchida, both of Kobe, and Tatsuei Nomura, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1983, Ser. No. 470,491
Claims priority, application Japan, Mar. 8, 1982, 57-37666; Mar. 8, 1982, 57-37667
Int. Cl.³ H02K 1/00
U.S. Cl. 310—179 8 Claims

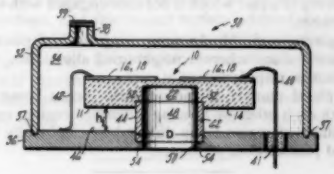


1. An air gap winding rotating electric machine comprising:
a rotor;
a magnetic shield comprising a plurality of metal plates laminated together to form a hollow cylinder disposed around and coaxial with said rotor;
a thin-walled electrically insulating cylinder disposed between said rotor and said magnetic shield, substantially surrounding and parallel to but not in contact with said rotor;
a plurality of sets of stator coils disposed at a plurality of locations about the outer circumference of said insulating cylinder;
a plurality of outer electrically insulating plates disposed about the outer circumference of said stator coils; and
pairs of taper keys inserted between the inner circumferential surface of said magnetic shield and the outer circumferential surface of said outer electrically insulating plates, each of said pairs of taper keys aligned parallel to the axis of said rotor.

4,454,440
SURFACE ACOUSTIC WAVE (SAW) PRESSURE SENSOR STRUCTURE

Donald E. Cullen, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 972,542, Dec. 22, 1978, abandoned. This application Feb. 29, 1980, Ser. No. 126,084
Int. Cl.³ H01L 41/08
U.S. Cl. 310—313 R 2 Claims

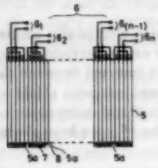


1. A surface acoustic wave (SAW) pressure sensor structure, comprising:
a SAW pressure sensor including a SAW delay line disposed in an active signal region on a first one of two parallel major surfaces of a substrate, said substrate having a deformable diaphragm formed therein coextensive with said active signal region, said diaphragm having a membrane thickness determined by the relative displacement of said first surface from a parallel interior surface defined by the end wall of a cylindrical cavity formed in the second major surface of said substrate,
a vacuum sealing enclosure including a base portion and a cover portion joined in a vacuum sealing relationship and adapted to receive said SAW sensor in a vacuum chamber formed therebetween, said base portion including an orifice therethrough adapted for alignment with said cavity in said substrate; and
a cylindrical metal sleeve having a central aperture formed along the length thereof and joined in a vacuum sealing relationship at opposite ends thereof to said cavity and to said orifice for providing a fluid conduit for external pressure signals through said vacuum environment from said orifice to said cavity, said sleeve supporting said SAW pressure sensor in displacement from said base portion at a distance which is from ten to twenty times greater than the wall thickness of said sleeve.

4,454,441
PIEZOELECTRIC DRIVING APPARATUS

Toshihiko Taniguchi, Osaka, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Filed Feb. 3, 1983, Ser. No. 463,503
Int. Cl.³ H01L 41/08
U.S. Cl. 310—328 9 Claims

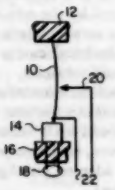


1. A piezoelectric driving apparatus comprising:
a fixed member and
a moving member which comprises
a plural number of piezoelectric blocks having piezoelectric substance, each of said blocks having electrodes for application of voltage in operative relation with the direction of electric polarisation in said block, to produce secondary piezoelectric effect at the application of a voltage thereto,
at least two engaging means respectively fixed to at least two of said plural number of piezoelectric blocks for making engagement to said fixed member, and
voltage application means for applying voltage to said electrodes with a predetermined sequence to make said secondary piezoelectric effect in a manner that said piezoelectric blocks individually increase or decrease in size in one direction to make or release said engagement and decrease or increase in size in another direction to make driving of a part which is not then engaged with said fixed member,
said piezoelectric blocks comprising stacked plural piezoelectric discs wherein neighboring discs have opposite direction of polarisation,
said plural number of piezoelectric blocks being isolated with each other by forming a disabled region, and
said disabled region being disabled by electrically isolating said piezoelectric substance.

4,454,442
PIEZOELECTRIC RELAY USING EULER LEVER

Michael B. Hosking, Poway, Calif., assignor to General Dynamics Electronics Division, San Diego, Calif.

Filed Jul. 15, 1983, Ser. No. 514,269
Int. Cl.³ H01L 41/08
U.S. Cl. 310—328 4 Claims

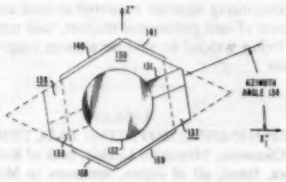


1. A relay comprising:
a single resilient, flexible elongate member made of a dielectric material;
an electrically conductive material mounted on the intermediate portion of the elongate member to provide a movable electrical contact;
means for supporting one end of the elongate member;
at least one fixed electrical contact positioned adjacent the movable electrical contact on the intermediate portion of the elongated member;
a solid piezoelectric body supporting the other end of the member;
a substantially rigid structural element holding the supporting means and the piezoelectric body spaced apart with the elongate member extending therebetween and slightly bowed toward the fixed electrical contact prior to energization of the piezoelectric body;
the piezoelectric body being expandable longitudinally upon being energized with a predetermined electrical signal to squeeze the elongate member endwise and cause it to further bow sufficiently to bring the movable electrical contact on the intermediate portion of the elongate member into or out of contact with the fixed electrical contact; and
the rigid structural element and the elongate member being made of the same dielectric material to thereby prevent inadvertent connection or disconnection between the movable and fixed electric contacts due to temperature variations.

4,454,443
QUARTZ RESONATORS FOR ACCELERATION ENVIRONMENTS

Theodore J. Lukaszek, Ocean, and Arthur Ballato, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1983, Ser. No. 477,204
Int. Cl.³ H01L 41/08
U.S. Cl. 310—348 22 Claims

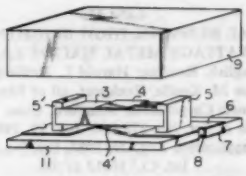


1. A plate like resonator of piezoelectric material having a predeterrmined crystallographic orientation with respect to a first reference axis in the plane of said resonator, said resonator comprising a second axis having a predetermined location in said plane offset at a given acute angle from said first axis, a first pair of flat parallel mounting surfaces adapted to be held in a mounting device, said surfaces being disposed on opposite peripheral sides of said resonator and positioned perpendicular to said second axis and at the complement of said angle with respect to said first axis, said flat sides extending along a substantial portion of the perimeter of said resonator for engaement with said mounting device so that mounting forces are distributed along and normal to said surfaces and are directed parallel to said second axis, the forces on opposite sides being collinear, said resonator maintaining a predetermined force-frequency characteristic.

4,454,444
$LITAO_3$ PIEZOELECTRIC RESONATOR

Yoshiro Fujiwara; Sumio Yamada; Hiroshi Hoshino, and Noboru Wakatsuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 18, 1983, Ser. No. 467,810
Claims priority, application Japan, Feb. 22, 1982, 57-25993; Apr. 20, 1982, 57-65945; Apr. 28, 1982, 57-72450; Jul. 7, 1982, 57-117999
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—360 11 Claims



1. A piezoelectric resonator which resonates due to thickness shear, comprising:

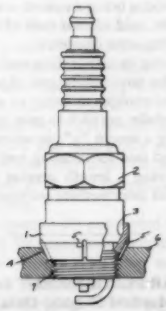
a strip-shaped resonance chip, made from an X-cut plate of lithium tantalate crystal having two surfaces, a thickness and a direction of primary oscillation, said resonance chip having a rectangular prism shape with a thickness corresponding to the thickness of the X-cut plate and a width measured perpendicular to the axis of said resonance chip; and

electrodes, formed on the sides of said resonance chip corresponding to the surfaces of the X-cut plate, said electrodes being centered along the axis of the resonance chip and having a width equal to the width of said resonance chip, the axis of said resonance chip inclining with respect to the Y-axis by an angle of $50° \pm 2°$ in the clockwise direction, and the axis of said resonance chip coincides with the displacement direction of the primary oscillation mode of the X-cut plate.

4,454,445
SPARK PLUG ATTACHMENT

Bernard C. Fisher, 41 Brookside Ave., Englewood, N.J. 07631

Filed Nov. 7, 1979, Ser. No. 92,225
Int. Cl.³ F02M *57/06*
U.S. Cl. 313—120 7 Claims

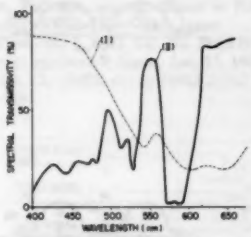


1. An attachment for a spark plug to take the place of the normal washer used in attaching the spark plug to the engine block comprising a sleeve having a higher heat conductivity than that of the body of the plug and having sufficient diameter to slip over the end of the spark plug adjacent the threaded end thereof, the outer end of the sleeve having a surface conforming to the seat of the engine block with which the spark plug is to be used, said seat-conforming surface having a plurality of transverse grooves, whereby, when the spark plug is screwed into the engine block, air passages are provided between the atmosphere and the surface around the threads of said spark plug.

4,454,446
CATHODE RAY TUBE FOR A LIGHT SOURCE

Hiroo Kobayashi, Kyoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00120, 371 Date Jan. 25, 1982, 102(e) Date Jan. 25, 1982, PCT Pub. No. WO81/03581, PCT Pub. Date Dec. 10, 1981
PCT Filed May 29, 1981, Ser. No. 346,071
Claims priority, application Japan, May 29, 1980, 55-72383
Int. Cl.³ H01J *29/86*; C03C *3/30*
U.S. Cl. 313—480 2 Claims

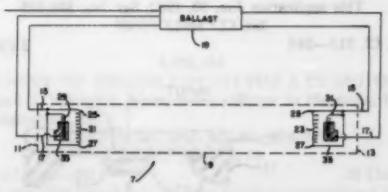


1. A cathode ray tube for a light source comprising: a vacuum envelope; a fluorescent surface formed on the inner surface of a face plate which is provided at one end of said vacuum envelope, said fluorescent surface adapted to emit light having one of three colors, red, green and blue; and an electron gun for generating a flood electron beam, disposed at the other end of said vacuum envelope in such a manner as to confront said fluorescent surface, at least said face plate of said vacuum envelope being made of a glass material containing oxides Nd_2O_3, Pr_2O_3, Fe_2O_3 and CeO_2.

4,454,447
DUAL FILAMENT FLUORESCENT LAMP WITH ELECTRON SHIELDING MEANS

William J. Roche, Merrimac, and Ralph P. Parks, Jr., Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 7, 1982, Ser. No. 415,308
Int. Cl.³ H01J *61/10, 61/42*
U.S. Cl. 313—492 9 Claims



1. A fluroescent lamp comprising:

an elongated interiorly phosphor coated tubular envelope with an ionizable fill material and opposing end walls sealed to said envelope with external base pins connected to electrical conductors passing therethrough;

spaced electrode structures affixed to said end walls and including starting and operating electrodes each having an

electron emmisive coating with said starting electrode connected to said electrical conductors, spaced inwardly of said end walls at a distance less than said operating electrode; and

an electron shielding means adjacent to a portion of and positioned intermediate said starting and said operating electrodes whereby rapid arc transfer between electrodes is enhanced and coil wattage reduced.

4,454,448

INTER-CHANNEL ISOLATION SCHEME FOR COMPACT, FOLDED DISCHARGE LAMPS

Victor D. Roberts, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 18, 1982, Ser. No. 339,956

Int. Cl.³ H01J *61/30, 61/42*

U.S. Cl. 313—493 **4 Claims**

1. A fluorescent lighting device comprising:

an evacuable, light-transmissive envelope formed from substantially two sheets, at least one of said sheets having channels therein which define a main discharge path, one of said sheets also possessing at least one ridge disposed between said channels, the other of said sheets possessing a channel complementarily matching said ridge so as to define a secondary path exhibiting a higher resistance to electrical discharge current flow than said main discharge path;

a phosphor disposed on the interior of said envelope;

an ionizable medium disposed within said envelope; and

at least one pair of electrodes disposed at opposite ends of said main discharge path.

4,454,449

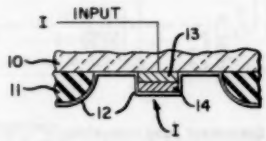
PROTECTED ELECTRODES FOR PLASMA PANELS

Stacy W. Hall, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 164,853, Jun. 30, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 394,005

Int. Cl.³ H01J *17/49*

U.S. Cl. 313—584 **2 Claims**



1. An improved plasma transfer display device comprising:

at least one envelope defining a channel containing an ionizable medium; and

an electrode located within said channel for initiating or terminating a plasma discharge of the ionizable medium proximate the electrode, said electrode comprising a conductive base a layer of magnesium oxide and a dielectric coating consisting essentially of a ruthenium oxide in a glass matrix and having a sheet resistivity of less than about 10 megohms per square formed between said conductive base and said magnesium oxide layer, said dielectric coating permitting direct coupling of the electrode with the ionizable medium and preventing contamination and breakdown of said magnesium oxide layer by said electrode during operation of the device.

4,454,450

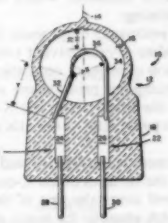
VERTICAL RUNNING, HIGH BRIGHTNESS, LOW WATTAGE METAL HALIDE LAMP

George J. English, Reading; Harold L. Rothwell, Jr., Rowley, and William M. Keeffe, Rockport, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 278,136, Jun. 29, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,506

Int. Cl.³ H01J *61/06*

U.S. Cl. 313—620 **3 Claims**



1. A miniature, low wattage, single ended, arc discharge lamp comprising:

a glass body defining an arc chamber and having a longitudinal axis;

an arc generating and sustaining medium within said arc chamber;

a pair of electrodes sealed in said body, said electrodes having intermediate sealing portions, and having first ends projecting outwardly therefrom and second ends terminating in said arc chamber, said first ends of said electrodes being substantially parallel to each other and said longitudinal axis;

one of said electrodes being an anode and the other electrode being a cathode, said second ends of said electrodes being substantially the same diameter;

said cathode having its terminating end curved back on itself to approach the terminating end of said anode, the space between said electrodes defining an arc length "x" whose axis is substantially parallel to said longitudinal axis;

said anode having a length "y", measured from said intermediate portion to said terminating end; and

said cathode having a length greater than "2y+x", measured from said intermediate portion to said terminating end.

4,454,451

CIRCULAR FLUORESCENT LAMP UNIT

Rudolph Metoff, Mayfield Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

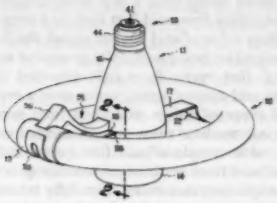
Filed Dec. 21, 1981, Ser. No. 333,199

Int. Cl.³ H01J *5/50*

U.S. Cl. 315—58 **3 Claims**

1. A circular flourescent lamp unit comprising a central hub containing lamp ballast means, a plurality of support arms extending radially from said hub and adapted to hold a circular flourescent lamp in a position surrounding said hub, and an

elongated resilient electrical connector member having one end thereof fixedly secured in a slot in said hub and extending from said hub substantially alongside one of said support arms and containing electrical wires and having angular socket means at the other end thereof for electrical connection to the



base plug of said lamp; said elongated resilient electrical connector member having a rectangular cross-section of which the smaller dimension is in the direction of bending of the connector member when it is connected to or disconnected from said lamp.

4,454,452

EMERGENCY LIGHTING SYSTEM

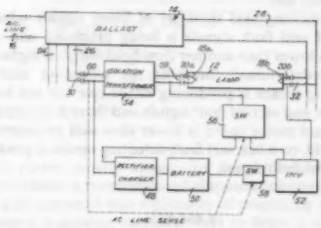
Robert S. Feldstein, 1396 Park La., Pelham Manor, N.Y. 10803

Continuation of Ser. No. 851,900, Nov. 16, 1977, Pat. No. 4,216,410. This application May 5, 1980, Ser. No. 146,349

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ H02J *9/06, 7/00;* **H05B** *41/14*

U.S. Cl. 315—86 **21 Claims**



1. An emergency power system for use with a lamp of the type mountable in a fixture and operable when powered by an AC utility line, said lamp illuminating when power from said AC utility line is operatively connected to first and second terminals on said lamp by corresponding first and second terminals on said fixture, said emergency power system being operable to illuminate said lamp when the AC line power falls below a predetermined level, said system comprising:

a rechargeable battery;

first circuit means operatively connected to said battery and powered thereby for generating an emergency AC potential sufficient to operate said lamp when said AC line power falls below said predetermined level;

actuating means for applying said emergency AC potential across said lamp terminals when said AC line power falls below said predetermined level and for preventing the application of said emergency potential across said lamp terminals when said predetermined AC line power level is present;

second circuit means operatively connected to said battery for charging said battery when said predetermined power level is present, said charging circuit means including a pair of input terminals, one of which is operatively connected to one of said fixture terminals; and

connecting means for operatively connecting the other of said charging circuit input terminals to the one of said lamp terminals corresponding to said one fixture terminal when said predetermined AC power level is present and for operatively disconnecting said other charging circuit input terminal from said one lamp terminal when said AC power level falls below said predetermined level, whereby when said AC power level is present said charging circuit means is in series with said lamp and the charging current to said battery is limited by the current flow through said lamp.

4,454,453

POWER SOURCE DEVICE FOR ION SOURCES

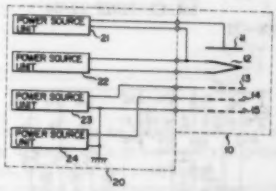
Toru Sugawara, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 9, 1982, Ser. No. 386,529

Claims priority, application Japan, Jun. 17, 1981, 56-92185

Int. Cl.³ H05B *41/36;* **H01J** *27/02*

U.S. Cl. 315—106 **10 Claims**



1. A power source device for ion sources including anode electrode means, beam extraction electrode means and cathode electrode means arranged between the anode and beam extraction electrode means, comprising:

first power source means adapted to cause a current to flow through said anode electrode means,

second power source means adapted to supply a beam acceleration voltage to said beam extraction electrode means,

third power source means adapted to apply an alternating voltage across said cathode electrode means, causing an alternating heating current to flow through said cathode electrode means, each cycle of said alternating voltage including first and second components having preset different levels and generated with a predetermined time interval from each other, and

control means generating a control signal to interrupt the operations of said first and second power source means during said predetermined time interval.

4,454,454

MOSFET "H" SWITCH CIRCUIT FOR A DC MOTOR

Richard J. Valentine, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 13, 1983, Ser. No. 494,201

Int. Cl.³ H02P *7/28*

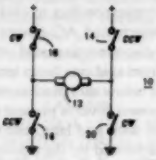
U.S. Cl. 318—293 **20 Claims**

16. An "H" switch circuit for providing bidirectional control to a DC motor comprising:

first and second series connected MOSFET's connected between a drain voltage line and a common voltage line;

third and fourth series connected MOSFET's connected in parallel with said first and second series connected MOSFET's, said first and fourth and said second and third MOSFET's having common connected gate terminals

thereof, said motor being connected in series with said first and fourth MOSFET's; and



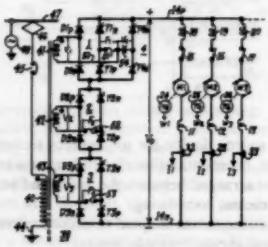
means for activating first and second control lines connected respectively to said common connected gate terminals of said first and fourth and said second and third MOSFET's.

4,454,455

FAULT RESPONSIVE MEANS FOR CHANGING CONTROL SEQUENCE OF A MULTIPLE-BRIDGE ELECTRIC POWER CONVERTER

Edward S. Matulevich, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Sep. 30, 1982, Ser. No. 429,729
Int. Cl.³ H02P *13/04*
U.S. Cl. 318—71 **5 Claims**



1. Improved means for controlling an electric power converter used to supply direct current to at least one electric motor, said converter comprising the combination of

first, second, and third rectifying circuits each having a-c input terminals, a pair of d-c output terminals, and controllable means including at least one pair of alternately conducting main electric valves for interconnecting said input and output terminals so as to convert alternating voltage at said input terminals to direct voltage of variable average magnitude at said output terminals, the pair of main valves in said first rectifying circuit having cyclically operative valve turn off means respectively associated therewith,

means for respectively applying a plurality of in-phase alternating voltages from an a-c power source to corresponding input terminals of said rectifying circuits,

means for serially connecting the output terminal pairs of said rectifying circuits to an electric load circuit including said motor, whereby the voltage applied to said load circuit is the sum of the output voltages of all of said rectifying circuits,

means for providing a speed feedback signal representative of the speed of said motor,

fault detecting means associated with said rectifying circuits for producing first, second and third fault signals in the abnormal event of short circuits in said first, second and third rectifying circuits, respectively,

means for producing a control signal having a value that varies between predetermined first and second limits, and control means responsive to said control signal and normally operative to generate first, second and third sets of periodic firing signals for respectively turning on said pairs of main valves in said first, second and third rectifying circuits in synchronism with the alternating voltages applied to their respective input terminals, the firing signals of said first set being nominally generated at an ignition angle (α_1) that varies from fully retarded to fully advanced as said control signal varies over a first predetermined range of values extending from said first limit to a preselected first intermediate value of said control signal, the firing signals of said second set being nominally generated at an ignition angle (α_2) that varies from fully retarded to fully advanced as said control signal varies over a second predetermined range of values extending from approximately said first intermediate value to a preselected second intermediate value outside of said first range, and the firing signals of said third set being nominally generated at an ignition angle (α_3) that varies from fully retarded to fully advanced as said control signal varies over a third predetermined range of values extending from approximately said second intermediate value to said second limit, said control means also being operative to control said valve turn off means so that normally the pair of main valves in said first rectifying circuit are periodically turned off in synchronism with the alternating voltage applied to the input terminals thereof at a desired extinction angle which varies within predetermined limits,

wherein the improvement comprises logic means connected to said fault detecting means and to said control means and responsive to said speed feedback signal:

(a) for inhibiting said first set of firing signals in response to said first fault signal;

(b) for blocking valve turn off operation of said control means in response to said first fault signal;

(c) for inhibiting said second set of firing signals in response to said second fault signal or whenever there is no first fault signal and motor speed is lower than a predetermined threshold; and

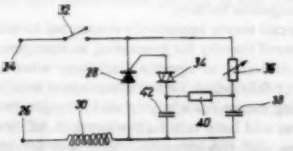
(d) for inhibiting said third set of firing signals whenever none of said fault signals is being produced and motor speed is lower than another threshold which is higher than said predetermined threshold, or whenever said fault detecting means is producing either one but not both of said first and second fault signals and there is no third fault signal and motor speed is lower than said predetermined threshold, or when said fault detecting means is producing said third fault signal.

4,454,456

METHOD AND CIRCUIT FOR OPERATING A SPRAY GUN HAVING A VIBRATING ARMATURE DRIVE

Wolfgang Hauser, Tuebingen, Fed. Rep. of Germany, assignor to Hugo Brennenstuhl GmbH & Co. KG, Tuebingen, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,338
Int. Cl.³ H02K *33/00*
U.S. Cl. 318—129 **11 Claims**



11. In a circuit for producing an electrical a.c. signal to energize a vibrating armature drive in a spray gun which is adapted to spray a fluid, the improvement comprising a control circuit which produces a pulse width modulated control signal

having abruptly rising leading edges and a controllable switch for electrically coupling a supply voltage source and said vibrating armature drive, a control terminal of said switch being connected to an output of said control circuit, said pulse width modulated control signal having abruptly rising leading edges causing the spray gun to produce a spray having relatively uniform characteristics across a range of fluid flow rates which includes low fluid flow rates; and

wherein said control circuit includes: an a.c. power source, a manually actuable switch and a thyristor connected in series with each other, the anode of said thyristor being at one end of and said armature drive being connected in parallel with said series-connected power source, switch and thyristor; first and second capacitors which each have one terminal connected to the anode of said thyristor; a bi-directional diode connected between the other terminal of said first capacitor and the gate of said thyristor; a variable resistor connected between the other terminal of said second capacitor and the cathode of said thyristor; and a resistor connected between said other terminal of said first capacitor and said other terminal of said second capacitor.

4,454,457

POWER SUPPLY SYSTEM FOR A LINEAR MOTOR

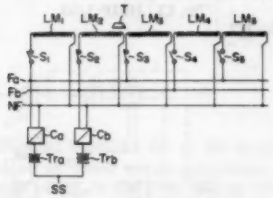
Kiyoshi Nakamura, Katsuta; Masayoshi Isaka, Hitachi, and Shigeyoshi Koike, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,220

Claims priority, application Japan, Jun. 19, 1981, 56-95060

Int. Cl.³ H02K *41/02*

U.S. Cl. 318—135 **9 Claims**



1. A power supply system for a polyphase linear motor which includes a propelling coil disposed continuously along a track and sectioned into a plurality of propelling coil units for generating a moving magnetic field to drive a vehicle, comprising plural sets of feeders, a power converter apparatus connected to said feeders, a group of switch means arranged for connecting alternately said plurality of propelling coil units to said plural sets of feeders, and control means for changing over said switch means sequentially so that said propelling coil units are successively supplied with power, as said vehicle travels, wherein

said plurality of propelling coil units are connected continuously in series to constitute said propelling coil and so defined by lead conductors that the propelling coil units disposed adjacent to each other have a common coil portion shared by them, each of said common coil portion extending for a length not smaller than an effective length of said vehicle;

each of said plural sets of feeders including a going feeder and a return feeder for each phase;

said switch means being constituted by first switches connected between one end of each of said propelling coil units and said going feeders, respectively, and second switches connected between the other end of each of said propelling coil units and said return feeders, respectively; and

said power converter apparatus being so arranged that power supply to one set of said feeders is changed over to another set of said feeders when said vehicle is located at a region defined by said common coil portion to thereby change over the power supply from one of the adjacent propelling coil units to the other, said adjacent propelling coil units having said common coil portion along which said vehicle is running at that moment.

4,454,458

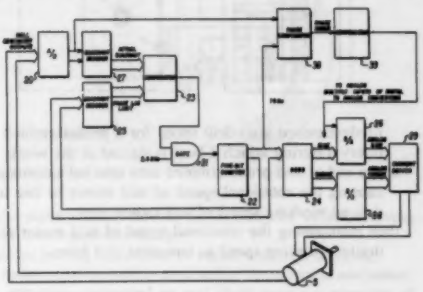
SYNCHRONOUS DRIVE FOR BRUSHLESS DC MOTOR

Gary L. Holland, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 2, 1981, Ser. No. 326,631

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—254 **6 Claims**



1. Apparatus for driving an electric motor having a rotor and a plurality of stator coils, at a plurality of predetermined constant speeds, said apparatus comprising:

drive means coupled to said motor for sequentially energizing said stator coils to generate a rotating magnetic field therein at a predetermined rate;

timing means for providing timing signals at a predetermined rate;

storage means coupled to the drive means and to the timing means for storing data representative of current patterns, said storage means responsive to said timing signals to provide signals representative of said current patterns to said drive means for determining the speed at which said motor is driven;

position sensing means coupled to said motor for providing feedback signals representative of the instanteous position of said rotor when it rotates in response to said rotating magnetic field; and

compensation means coupled to the drive means, to the timing means, and to the position sensing means and responsive to said feedback signals and said timing signals for providing a compensation signal inversely proportional to the rate of change of the phase lag of said rotor with respect to said rotating magnetic field, said drive means responsive to said compensation signal to compensate for transient increases and decreases in rotational speed of rotor during startup and thereafter.

4,454,459

METHOD OF CONTROLLING THE SPEED OF A DRILL, HAMMER-DRILL, OR ROTARY HAMMER AND APPARATUS THEREFOR

Siegfried Huber, Johannesberg, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 4, 1981, Ser. No. 231,283

Claims priority, application European Pat. Off., Feb. 5, 1980, 80100577.8

Int. Cl.³ H02P *5/16*

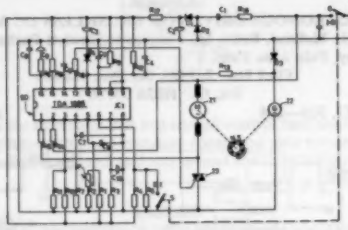
U.S. Cl. 318—305 **12 Claims**

1. A method of controlling the speed of an electrically con-

trolled drill, hammer-drill or rotary hammer driven by an electric motor while performing on work, comprising the steps of:

initially raising the rotational speed of the motor from zero to a predetermined start-drill speed;

then maintaining the rotational speed of the motor at said



predetermined start-drill speed for a predetermined time interval during which a bore is started in the work;

at the end of said predetermined time interval automatically causing the rotational speed of said motor to rise to the desired working speed of said motor; and

then maintaining the rotational speed of said motor at said desired working speed to complete said bore.

4,454,460

D.C. ROTARY MACHINE WITH INTERPOLE COMPENSATION

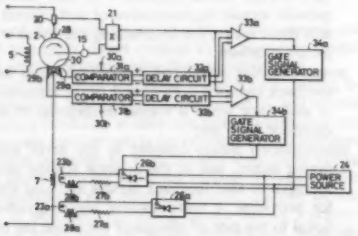
Kazuo Tahara; Takayuki Matsui; Haruo Koharagi, all of Hitachi; Hisaya Sasamoto, Mito; Seiji Yamashita, Katsuta, and Noriyoshi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,593

Claims priority, application Japan, May 22, 1982, 57-85672

Int. Cl.³ H02K *23/18, 23/20*

U.S. Cl. 318—491 **8 Claims**



1. D. C. rotary maching comprising:

a stator having a yoke of annular shape, a plurality of main pole cores disposed along the inner periphery of said yoke in a relation equally spaced apart by a predetermined distance from each other in the circumferential direction of said yoke, a main pole winding wound around each of said main pole cores, a plurality of interpole cores disposed along the inner periphery of said yoke at positions intermediate between said circumferentially spaced main pole cores, and a interpole winding wound around each of said interpole cores;

a rotor having a rotary shaft, an armature core fixed to said shaft, and an armature winding wound around said armature core;

a commutation equipment having a commutator fixedly mounted on said rotary shaft, and brushes held in a position capable of making sliding contact with said commutator;

first and second interpole compensation winding circumferentially biased toward both sides respectively of said interpole core relative to a circumferential center of said interpole core;

first and second brush members disposed on a commutation starting side and a commutation ending side of one of said brushes, respectively, for detecting a first voltage between said first brush member and said one brush when the segment of said commutator begins to contact with said first brush member, and a second voltage between said second brush member and said one brush when the segment of said commutator begins to leave from said second brush member; and

a first current controller connected between said first brush member and said first interpole compensation winding, and a second current controller connected between said second brush member and said second interpole compensation winding, for controlling currents flowing through said first and second interpole compensation windings corresponding to said first and second voltages, respectively.

4,454,461

APPARATUS FOR THE CONTROL OF A SALIENT-POLE MACHINE

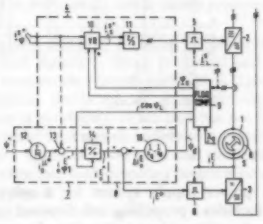
Felix Blaschke, and Theodor Salzmann, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 17, 1982, Ser. No. 378,860

Claims priority, application Fed. Rep. of Germany, May 25, 1981, 3120797; May 25, 1981, 3120768

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—717 **19 Claims**



1. A device to control a salient pole machine comprising:

(a) a flux computation device to compute the instantaneous flux of the machine;

(b) a stator-current control device, connected with the flux computation device, to generate a stator-current control signal;

(c) a stator-current actuator to feed a stator current to the stator of the machine, on the basis of the stator-current control signal;

(d) an exciting-current control device, comprising:

(1) an inlet connected with the flux computation device,

(2) an inlet for the input of a standard flux value,

(3) computing elements which compute, from the instantaneous flux of the machine, the standard flux value and an inductance parameter assigned to the main inductance of a non-salient pole machine, an exciting-current value that is mathematically assigned to the non-salient pole machine, with the value of the shunt inductance of the salient pole machine being fed into the computing elements as an inductance parameter, and

(4) an outlet for the computed exciting-current value as an exciting-current control signal;

(e) a preliminary control stage which computes, from the longitudinal component of the instananeous flux com-

puted in the flux computation device and a correction factor computed from parameters for the series and shunt inductances of the salient pole machine, a disturbance variable, which is switched to the exciting-current control signal to correct the rotor asymmetry; and

(f) an exciting-current actuator to feed a controlled exciting current to the rotor of the machine, on the basis of the corrected exciting-current control signal.

4,454,462

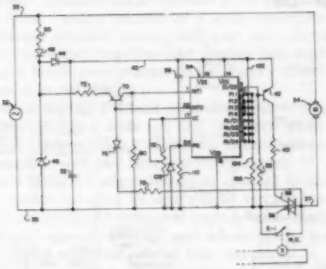
POWER FACTOR MOTOR CONTROLLER

Robert J. Spann, Euless, Tex., assignor to Neha International, Dallas, Tex.

Continuation of Ser. No. 198,763, Oct. 20, 1980, abandoned. This application Apr. 25, 1983, Ser. No. 487,353

Int. Cl.³ H02P 7/36

U.S. Cl. 318—729 **43 Claims**



1. A power factor controller for an AC induction motor energizable by an AC power source, comprising:

switch means having an ON state and an OFF state for selectively enabling energization of said motor by an AC power source in response to a gate signal triggering said switch means into the ON state, said AC power source being characterized by periodical voltage and current alternating waveforms;

means for detecting zero cross-over of the voltage waveform applied to said motor;

gate control means responsive to said voltage zero cross-over detecting means for generating a plurality of discrete time windows during which the ON/OFF status of said switch means can be detected;

means for detecting the ON/OFF status of said switch means during each time window; and,

means responsive to the detected ON/OFF status of said switch means during each time window for controlling the application timing of said gate signal.

21. A method of controlling the power factor for an AC induction motor energizable by an AC power source, said method:

providing a semiconductor switch enabling energization of said motor by said source in response to a gate signal triggering said switch into conduction;

sensing the voltage zero crossing of said source;

initiating a consecutive sequence of time delayed periods forming discrete time windows;

sensing zero crossing of current through said motor; and

selectively controlling the timing of said gate signal in the cycle of said source according to the window of occurrence of said current zero crossing.

4,454,463

ELECTROMOTIVE DRIVE

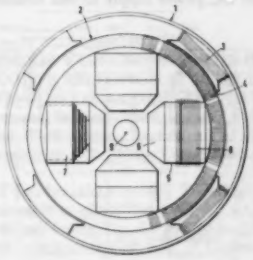
Florian R. Popescu, Ringstrasse 15, D-1000 Berlin 45, Fed. Rep. of Germany

Filed Oct. 8, 1980, Ser. No. 195,299

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1979, 2942073

Int. Cl.³ H02K 7/02

U.S. Cl. 322—4 **5 Claims**



1. An electromotive device, particularly for vehicles having storage batteries, comprising:

a stator having a plurality of stator windings thereon;

an output shaft rotatably mounted with respect to said stator;

an armature connected to said shaft having a plurality of armature windings thereon which interact with the stator windings when electricity is applied to the stator and armature windings;

electrical control means connected to said stator and armature windings for providing pulses of electricity thereto to cause rotation of said armature with respect to said stator;

a plurality of radially movable pulsation masses distributed equally around said armature and connected to said armature for radial movement with respect to said shaft;

spring means connected to said armature and engaged with each of said pulsation masses for biasing each pulsation mass radially inwardly of said armature;

said electrical control means operable to cause rotation of said armature at an operating speed, with each of said pulsation masses moving according to a principal of resonance pulsation torque motors with a radial outwardly directing centrifugal force experienced by each pulsation mass counteracted by a biasing force of each associated spring means;

a coil winding wound about each pulsation mass for receiving electrical impulses to control the position of each pulsating mass;

each coil winding connected to said electrical control means and said electrical control means operable to supply electrical impulses to each coil winding to cause each pulsation mass to cyclically and quickly be displaced radially outwardly during rotation of said armature at its operating speed.

4,454,464

PULSAR ROTOR SYSTEM AND COIL WINDING

Lebern W. Stroud, 321 Charleston Pl., Hurst, Tex. 76053

Filed Dec. 17, 1981, Ser. No. 331,643

Int. Cl.³ H02P 9/02, 9/11

U.S. Cl. 322—28 **13 Claims**

1. A system coupled to a multi-phase rectified rotary field system of a motor vehicle, said multi-phase system comprising a rotatable coil for forming said rotary field when excited, stationary windings, an output for applying current to a load, and rectifier means coupled to said stationary windings and to said output, said system comprising:

a DC power supply coupled to said output,

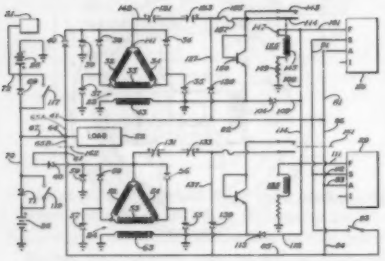
regulator means having an input coupled to said DC power supply and an output coupled to said rotatable coil,

capacitor means,

switch means coupled to said capacitor means and to said DC power supply,

said switch means being adapted to be placed in first or second conditions,

said switch means when in said second condition electrically connecting said capacitor means between said stationary windings and said rotatable coil and electrically connecting said DC power supply to said rotatable coil,



said switch means when in said first condition interrupting the electrical connection of said capacitor means between said stationary windings and said rotatable coil and interrupting the electrical connection of said DC power supply with said rotatable coil, and

control means coupled to said output of said regulator means for causing said switch means to be placed in said second condition when the output of said DC power supply drops to a given level.

4,454,465

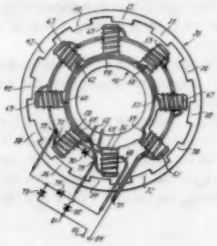
ELECTRIC GENERATOR THAT OPERATES WITH FEW AMPERE-TURNS IN FIELD WINDING

William J. Greene, Walterboro, S.C., assignor to Teledyne Walterboro, a Division of Teledyne Industries, Inc., Calif.

Filed Apr. 29, 1981, Ser. No. 258,584

Int. Cl.[3] **H02P** *9/10, 9/40;* **H02K** *3/00, 19/26*

U.S. Cl. 322—49 **49 Claims**



1. An electric generator which comprises a stationary member of magnetic material that has a plurality of circumferentially-spaced poles thereon, a rotatable member of magnetic material that has a plurality of circumferentially-spaced poles thereon, said rotatable member being mounted adjacent to, and being rotatable relative to, said stationary member to provide relative movement between said poles on said members, a main winding which has one section thereof wound on at least one pole of one of said members and which has a further section thereof wound on at least one further pole of said one member, said main winding responding to rotation of said rotatable member relative to said stationary member to tend to cause current to flow in said one section and in said further section thereof, and uni-directional means that permit current to flow in said one section and in said further section, respectively, of said main winding as the poles on which said sections are wound separate from the poles of the other member, said uni-directional means preventing current flow in said one section and in said other section, respectively, of said main winding as the poles on which said sections are wound approach the poles of said other member.

4,454,466

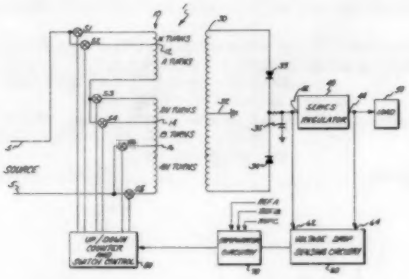
POWER SUPPLY HAVING AUTOMATICALLY VARIED PRIMARY TURNS

Rolland R. Ritter, St. Paul, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 29, 1982, Ser. No. 444,946

Int. Cl.[3] **G05F** *1/44*

U.S. Cl. 323—258 **4 Claims**



1. A circuit including a transformer having a primary comprised of a plurality of turns, and a secondary comprised of a plurality of turns, and a voltage regulator operationally intermediate to said secondary and a load, said voltage regulator having an input voltage and an output voltage and a drop-out voltage, comprising:

a means for sensing the voltage drop across said voltage regulator, said voltage drop being the difference between said input voltage and said output voltage;

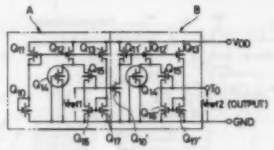
means for comparing said voltage drop to a first reference voltage level above said drop-out voltage, and a second reference voltage level above said first reference voltage level, said first reference voltage level and said second reference voltage level comprising a desired voltage range, said voltage drop being input to said comparing means by said sensing means, said comparing means generating a first error signal whenever said voltage drop is below said first reference voltage level, and a second error signal whenever said voltage level is above said second reference voltage level; and

a means for varying the number of turns of said primary in response to said first and second error signals being output from said comparing means to maintain said voltage drop within said desired voltage range, said varying means reducing the number of turns of said primary which are energized to increase said input voltage to said series regulator in response to said first error signal, said varying means increasing the number of turns of said primary which are energized to reduce said input voltage to said voltage regulator in response to said second error signal.

4,454,467
REFERENCE VOLTAGE GENERATOR

Jiroh Sakaguchi, Hino, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,901
Claims priority, application Japan, Jul. 31, 1981, 56-119072
Int. Cl.³ G05F 3/08
U.S. Cl. 323—313 18 Claims

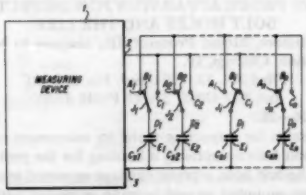


1. A reference voltage generator comprising:
an output terminal;
a bias circuit including a first MISFET which is supplied across its gate and source with a voltage between said output terminal and a reference point and which produces a drain - source current of a level corresponding to the voltage supplied across said gate and source; said bias circuit generating first and second bias currents which have levels proportional to the drain - source current of said first MISFET;
a second MISFET which has a drain - source path coupled between a first node and said reference point, and a gate coupled to a drain thereof; the drain - source path being supplied with said first bias current; and
a third MISFET which has a gate coupled to said first node, a source coupled to said output terminal, and a drain, whose threshold voltage is made a value smaller than that of said second MISFET and whose drain - source path is supplied with said second bias current;
whereby a voltage which corresponds to a difference between a threshold voltage of said first MISFET and that of said third MISFET is supplied from said third MISFET to said output terminal.

4,454,468
SWITCHING DEVICE FOR THE ELECTRICAL MEASUREMENT OF REACTIVE IMPEDANCES AND A MEASURING BRIDGE USING SUCH A SWITCHING DEVICE

Gérard Colin, and Hervé Reamot, both of Bagnolet, France, assignors to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Apr. 20, 1982, Ser. No. 370,129
Claims priority, application France, Apr. 21, 1981, 81 07913
Int. Cl.³ H03H 1/00
U.S. Cl. 323—365 4 Claims

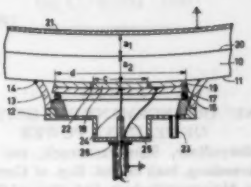


1. A reactive impedance measuring device comprising:
a measuring bridge having first and second ends and a plurality of branches in parallel,
each branch including a reactive impedance to be measured having a first end electrically connected to said first end of said measuring bridge and further including a switch, said switch in each branch controlled by a signal for successively connecting each reactive impedance in parallel across said ends of said measuring bridge,
each of said switch having a measuring position for electrically connecting a second end of said reactive impedance to said second end of the measuring bridge, and a rest position for short-circuiting both ends of said reactive impedance,
whereby during measurement of a selected reactive impedance, all other reactive impedance are short-circuited.

4,454,469
MEASUREMENT OF VARIATIONS IN THE DISTANCE BETWEEN A COLOR SELECTION ELECTRODE AND A DISPLAY WINDOW OF A COLOR DISPLAY TUBE

Bernhard Achtermann, Stolberg-Dorff; Hans L. Kutscher, Aachen-Brand, and Hans Lankes, Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 152,973, May 23, 1980, abandoned, which is a continuation of Ser. No. 921,798, Jul. 3, 1978, abandoned. This application Sep. 23, 1982, Ser. No. 421,935
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731752
Int. Cl.³ G01R 27/26
U.S. Cl. 324—61 P 13 Claims



1. A method of capacitively measuring variations in a previously-adjusted nominal distance between facing surfaces of a color selection electrode and a display window for a display tube, said method comprising the steps of :
(a) positioning a measuring electrode on the surface of the window remote from the color selection electrode;
(b) positioning a screening electrode on said remote surface of said window, said screening electrode surrounding the measuring electrode and having a predetermined outer dimension relative to said nominal distance and a nominal thickness of the window;
(c) applying to the measuring electrode an alternating voltage referenced to the color selection electrode and the screening electrode; and
(d) measuring the capacitance between the color selection electrode and the measuring electrode;
said screening electrode's predetermined outer dimension being selected such that it influences the homogeneity of the electric field produced by the alternating voltage to degree sufficient to minimize the influence of variations in window thickness on the measured capacitance.

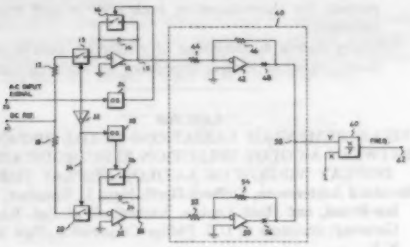
4,454,470
METHOD AND APPARATUS FOR FREQUENCY MEASUREMENT OF AN ALTERNATING CURRENT SIGNAL

Fred H. Boettner, and Loren H. Walker, both of Salem, Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 29, 1981, Ser. No. 335,377
Int. Cl.³ G01R 23/02
U.S. Cl. 324—78 R 12 Claims

1. A method of measuring the frequency of an alternating current signal comprising:

(a) repetitively developing first and second signals having values representative, respectively, of the times said alternating current signal exist in alternate one-half cycles;
(b) retaining the most recently developed of said values representing a period of a single half cycle; and



(c) continuously comparing the retained value with the value presently being developed to provide an output signal representative of the greater thereof, said output signal being indicative of the frequency of said alternating current signal.

4,454,471

ELECTRONIC ARRANGEMENT FOR DETERMINATION OF REACTIVE POWER

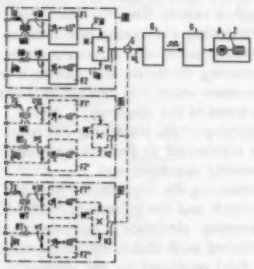
Manfred Schwendtner, Schwarzenbruck, and Günter Steinmüller, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 13, 1981, Ser. No. 321,273

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043303

Int. Cl.³ G01R *11/16, 21/06*

U.S. Cl. 324—141 **6 Claims**



1. An electronic arrangement for determination of reactive power, including two transducers for connection to an electrical power supply having two outputs delivering measuring voltages respectively proportional to the supply current and supply voltage; two all-pass phase-shifter elements connected to the two outputs of the two transducers such that at the rated frequency of the power supply, one all-pass produces a phase shift of $\phi_2 = +45°$ and the other all-pass a phase shift of $\phi_1 = -45°$; and a multiplier element means, coupled to said two all-pass phase shifter elements, for multiplying the two outputs of said two all-pass phase shifter elements to produce an output signal proportional to the reactive power therethrough.

4,454,472

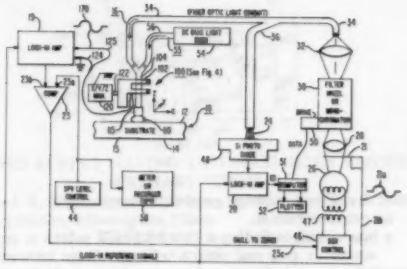
METHOD AND APPARATUS FOR DETERMINING MINORITY CARRIER DIFFUSION LENGTH IN SEMICONDUCTORS

Arnold R. Moore, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,250

Int. Cl.³ G01R *31/26*

U.S. Cl. 324—158 R **34 Claims**



1. A method for determining the minority carrier diffusion length of a sample of semiconductor material, the sample having two major surfaces, one of the surfaces arranged for illumination and the other surface shielded from illumination including the steps of:
(a) providing on a portion of the one major surface of the sample a substantially transparent drop of an electrolyte solution having sufficient surface tension to sustain said drop on said surface and containing redox couples, said electrolyte solution being soluble, stable and non-reactive to the semiconductor material and free of solid or gaseous products and having a redox potential to form a liquid Schottky barrier at the surface of the sample;
(b) holding said drop on said surface portion beneath a body of transparent material;
(c) substantially illuminating said portion of the one major surface of the sample with monochromatic light that is of a selected wavelength by passing said light through said transparent conducting surface and said drop of redox couple solution to provide at said conducting surface an electrical signal representing the surface photovoltage (SPV) on the sample generated in response to said light;
(d) controlling the SPV electrical signal to a predetermined value; and
(e) providing a first electrical signal representing the illuminating intensity (I) incident upon the sample, and a second electrical signal representing the wavelength of the light.

4,454,473

SPINNING PROBE APPARATUS FOR INSPECTION OF BOLT HOLES AND THE LIKE

Peter J. Rosauer, Mount Prospect, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

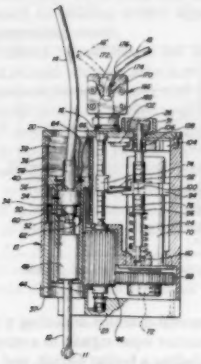
Filed Jul. 13, 1981, Ser. No. 282,391

Int. Cl.³ G01R *33/00*; F16H *35/00*

U.S. Cl. 324—262 **14 Claims**

1. Apparatus for inspecting metal by movement of a probe around a bolt hole comprising a housing for the probe disposable over the bolt hole, a probe carriage mounted in said housing, a motor mounted to said housing provided with driving means connected to said probe carriage for driving said probe carriage along the inside of said housing, trip means, track means in said housing connecting said trip means to said carriage for movement in a certain path in proportion to movement of said carriage, stop means, mounting means in said housing supporting said stop means in a position along said

certain path, first and second limit switches connected in circuit with said motor for deenergizing said motor when operated, operating means for operating said first and second limit switches at certain relative positions of said trip and stop means to determine the limits of movement of said carriage, said operating means comprising switch actuating means extending outwardly from said limit switches, one of said switch actuating means being in the path of movement of said trip means, a limit switch actuating collar connected to said track means and disposed to intercept the other of said outwardly extending switch actuating means, said track means being movably mounted in said housing to urge said connected limit switch actuating collar into engagement with said other of said outwardly extending switch actuating means when the trip means engages the stop means.



4,454,474

NUCLEAR MAGNETIC RESONANCE SYSTEMS

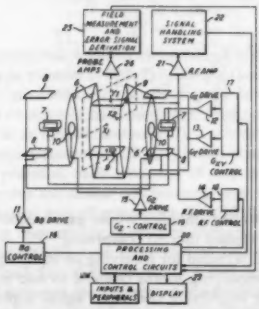
Ian R. Young, Middlesex, England, assignor to Picker International Limited, Wembley, England

Filed Dec. 14, 1981, Ser. No. 330,215

Claims priority, application United Kingdom, Jan. 7, 1981, 8100369

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **8 Claims**



1. A method of examining a slice of a body by nuclear magnetic resonance, said method comprising the steps of:

(a) applying to the body a steady magnetic field along an axis therein;

(b) applying a first gradient magnetic field which, in conjunction with the steady field, gives a predetermined magnetic field in said slice of the body;

(c) in conjunction with the first gradient field, applying a periodic magnetic field at the Larmor frequency for the predetermined field in the slice to cause resonance therein, and

(d) subsequently sensing resonance signals in the presence of a further gradient magnetic field and using said resonance signals to evaluate said slice, wherein the periodic field is applied in first and second distinct pulses, each in conjunction with said first gradient field, the total field integral of the periodic field being sufficient to rotate the spin vectors of nuclei in the slice through an angle of $\pi/2$ radians and between the first and second pulses there is applied a further pulse of the periodic field applied in the absence of the first gradient magnetic field, of field integral sufficient to rotate the spin vectors through an angle of π radians.

4,454,475

LIGHT EMISSION DELAY CIRCUIT

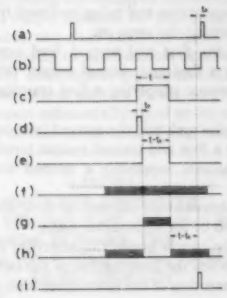
Ryuichi Tsuchiya, Yokohama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,235

Claims priority, application Japan, Dec. 25, 1981, 56-209098

Int. Cl.³ G01M *15/00*

U.S. Cl. 324—392 **5 Claims**



1. A light emission delay circuit for a timing light for adjusting the emission of light resulting from an ignition signal to a time when a piston in an engine cylinder reaches a top dead center position, comprising:

(a) first means responsive to a first signal indicative of the time for the ignition of a particular engine cylinder and a second signal having a leading edge substantially indicating the ignition time of each engine cylinder for producing a third signal having a leading edge aligned with a leading edge of said second signal, said third signal being substantially two periods of said second signal beyond said first signal and having a pulse width equal to the period of said second signal;

(b) second means for delaying said leading edge of said third signal;

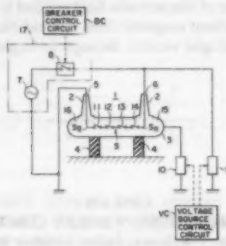
(c) third means for generating a fourth signal having a leading edge aligned with the leading edge of said third signal as delayed by said second means and a trailing edge aligned with a trailing edge of said third signal as supplied from said first means; and

(d) fourth means for counting a clock signal upwardly during the interval of said forth signal and then counting said clock signal downwardly during an interval equal to said interval of said fourth signal to produce an output signal for enabling the timing light to emit light.

4,454,476
METHOD OF AND APPARATUS FOR SYNTHETIC TESTING OF A MULTI-BREAK CIRCUIT BREAKER

Akio Kobayashi, Yokohama; Satoru Yanabu, Tokyo, and Shoji Yamashita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1982, Ser. No. 395,712
Claims priority, application Japan, Jul. 14, 1981, 56-108843
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—424 11 Claims



1. A method of synthetic testing of a multi-break circuit breaker having a metallic tank forming the enclosure of the circuit breaker and a series connection of interrupter units supported by and insulated from the tank, and a first and a second lead conductors connected to the first and second ends of the series connection and being insulated from the tank, said method comprising the steps of:

connecting the first and second lead conductors, respectively, to a first and second output terminals of a first voltage source supplying a first transient recovery voltage;

connecting the tank and the second lead conductor, respectively, to a first and second output terminals of a second voltage source supplying a second transient recovery voltage;

causing a short-circuit current to flow through the series connection of the interrupter units;

operating the circuit breaker to interrupt the current;

operating, when the interruption of the current through the series connection of the interrupter units is completed, the first voltage source;

conditioning the circuit breaker so that the first transient recovery voltage supplied from the first voltage source is applied, in effect, across a first one of the interrupter units at the second end of the series connection or across a train of interrupter units consisting of part only of the series connection of the interrupter units and including said first one of the interrupter units; and

operating, simultaneously with the operation of the first voltage source, the second voltage source whereby the second transient recovery voltage supplied from the second voltage source is applied across the tank and the second lead conductor;

the first transient recovery voltage having substantially the same magnitude as a partial transient recovery voltage to be applied across the interrupter unit or units whose breaking performance is to be tested;

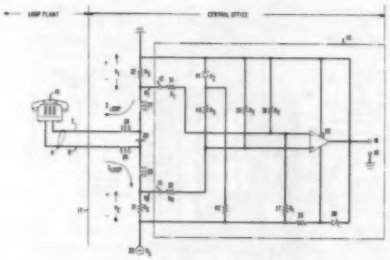
the second transient recovery voltage having substantially the same magnitude as a whole transient recovery voltage to be applied across all the interrupter units of the circuit breaker;

the polarity of the first transient recovery voltage on the first output terminal with reference to the second output terminal of the second voltage source being the same as the polarity of the second transient recovery voltage on the first output terminal with reference to the second output terminal of the first voltage source.

4,454,477
LOOP CURRENT DETECTOR WITH THRESHOLD SETTING IMPEDANCE

Daniel M. Joffe, Parsippany, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 28, 1982, Ser. No. 372,741
Int. Cl.³ H04M *3/22*
U.S. Cl. 328—149 12 Claims



1. A loop circuit current detector including a coupling network for applying detector input signals to a comparator, said coupling network including a bridge circuit, and said detector being characterized in that there are provided

means for balanced said bridge circuit,

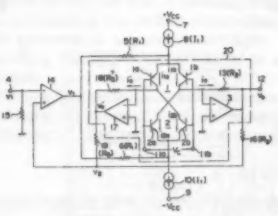
means for imposing a predetermined offset bias on an input terminal of said comparator, and

means, responsive to detector input signals, for biasing said comparator input terminal in opposition to said offset bias.

4,454,478
GAIN-CONTROLLED AMPLIFIER

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 11, 1982, Ser. No. 387,753
Claims priority, application Japan, Jun. 19, 1981, 56-90166; Jun. 19, 1981, 56-90167; Jun. 19, 1981, 56-95110
Int. Cl.³ H03G *3/10*
U.S. Cl. 330—254 11 Claims



1. A gain-controlled amplifier whose gain is controlled by a control voltage applied thereto comprising:

an input signal terminal for receiving an input signal;

input signal amplifying means coupled to said input signal terminal for amplifying said input signal applied to said input signal terminal;

first bipolar transistor pair having first and second transistors of same conductivity types each transistor having a base, an emitter, and a collector, both emitters being joined together to form a first joined emitter and driven by an output of said input signal amplifying means;

second bipolar transistor pair having third and fourth transistors of same conductivity types each transistor having a base, an emitter, and a collector, both emitters being

joined together to form a second joined emitter and driven by an output of said input signal amplifying means;

first generating means for generating a first signal representing a current difference between collector currents of said first and fourth transistors;

second generating means for generating a second signal representing a current difference between collector currents of said second and third transistors;

addition means for adding output signals of said first and second generating means;

negative feedback circuit means for negative-feeding back an output of said addition means to an input side of said input signal amplifying means; and

an output signal terminal coupled to derive one of the output signals of said first and second generating means therefrom as an output signal of said gain-controlled amplifier;

said bases of said first and third transistors being joined together to form a first control voltage input terminal;

said bases of said second and fourth transistors being joined together to form a second control voltage input terminal; and

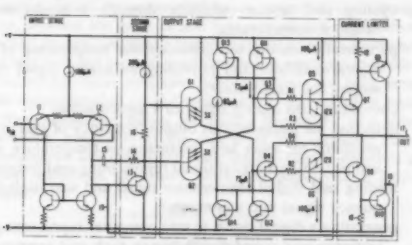
said control voltage being applied across said first and second control voltage input terminals.

4,454,479

OPERATIONAL AMPLIFIER WITH IMPROVED OUTPUT CAPABILITY

Dewayne A. Spires, Plaistow, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1982, Ser. No. 451,024
Int. Cl.³ H03F *3/18, 3/26*
U.S. Cl. 330—263 **6 Claims**



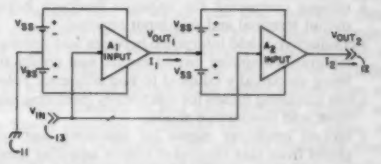
1. An operational amplifier comprising a first pair of complementary type transistors (Q5, Q6) having their emitter-collector paths connected in series across a source of reference potential, the emitters of said transistors being connected to each other and to an output terminal (17), a second pair of complementary type transistors (Q3, Q4) being coupled across said reference potential, each transistor of said second pair being coupled across the similar conductivity type transistor of said first pair, a first pair of resistances (R1, R2) of predetermined value being respectively connected between the bases of the similar conductivity type transistors of said first and second pair, a second pair of resistances (R3, R4) being respectively connected between the emitters of the transistors of said second pair and said output terminal, each of said second pair of resistances having a value substantially equal to said predetermined value plus the intrinsic base resistance of the transistors of the first pair, and a pair of current mirror means (Q11, Q13, and Q12, Q14) being respectively coupled from the collectors of said second pair of transistors to the bases of the similar conductivity type transistors of said first pair to provide additional base drive to the first pair of transistors to achieve large current outputs therefrom.

4,454,480

AMPLIFYING WITH CASCADED CLASS B AMPLIFIERS

Lars P. Allfather, and John E. Levreault, both of 85 Walnut St., Watertown, Mass. 02172

Filed Jul. 15, 1981, Ser. No. 283,686
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—297 **8 Claims**



1. Amplifying apparatus comprising,

at least first and second class B amplifying means each having an input and an output,

a common terminal and an output terminal, means for applying a common input signal to said first and second amplifying means inputs,

a first source of D.C. potentials connected to said common terminal delivering D.C. power to said first amplifying means,

a second source of D.C. potentials connected to the output of said first amplifying means delivering D.C. power to said second amplifying means,

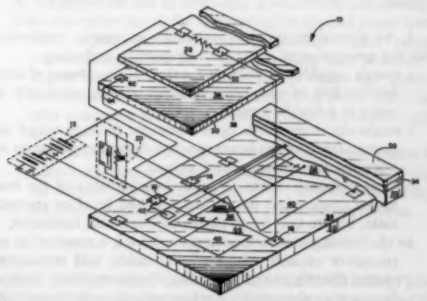
and means for coupling the output of said second amplifying means to said output terminal for providing between said output terminal and said common terminal an output signal corresponding to said common input signal substantially faithfully amplified at a predetermined impedance level with the output current at the output of the first amplifying means substantially equal to the output current at the output of said second amplifying means.

4,454,481

SHIELDED AMPLIFIER

Harold F. Lewis, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 4, 1982, Ser. No. 354,840
Int. Cl.³ H03F *3/14*
U.S. Cl. 330—307 **14 Claims**



1. A shielded amplifier adapted for connection to a power source and having an input terminal and output terminal and being referenced to a reference potential, said shielded amplifier being further adapted to receive a signal from a high impedance signal source referenced to said reference potential, said shielded amplifier being required to amplify said signal with relatively uniform gain over a predetermined bandwidth and to output said amplified signal at said output terminal and wherein said bandwidth is subject to substantial degradation

due to stray parasitic capacitance, said shielded amplifier comprising:

a substantially planar base substrate of semiconductor material having a first surface, said input and output terminals being formed on said first surface;

an integrated amplifier circuit means formed on said first surface, for amplifying said signal present at said input terminal and to provide an amplified signal to said output terminal;

a resistor connected for negative feedback between said output terminal and said input terminal;

a conductive shield interposed between said resistor and said integrated amplifier circuit means, said conductive shield being electrically coupled to said reference potential;

a first insulating means for electrically insulating said resistor from said conductive shield;

a second insulating means for insulating said conductive shield from said integrated circuit amplifier means;

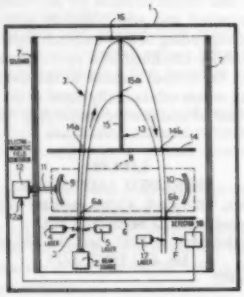
wherein said conductive shield is disposed to reduce stray parasitic capacitance thereby increasing said shielded amplifier uniform gain over a predetermined bandwidth.

4,454,482

ATOMIC OR MOLECULAR BEAM FREQUENCY STANDARD WITH OPTICAL PUMPING AND OPEN RESONATOR

Andrea DeMarchi, Via Sperino 13, Lessona (Vercelli), Italy

Filed Oct. 9, 1981, Ser. No. 310,254
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **10 Claims**



1. An atomic (molecular) resonance apparatus, particularly for the generation of a standard frequency, including:

a source capable of generating a slow atomic beam of atoms (molecules) of one type, directed almost vertically upward in a fountain configuration,

a single electromagnetic open resonator through which said atomic (molecular) beam passes a first time going up and a second time coming back down,

optical pumping means to produce transitions of the beam atoms (molecules) into a first selected level or energetic state, before said beam passes through said resonator,

an electromagnetic field generator device, connected to said resonator capable of generating inside said resonator a spatial distribution of oscillating electromagnetic field at a frequency substantially correspondent to the energy difference between said first level or energetic state and a second level or energetic state of the beam atoms (molecules),

detecting means capable of providing an electric signal indicative of the number of beam atoms (molecules) which inside said resonator have undergone a transition from said first to said second level or energetic state, and,

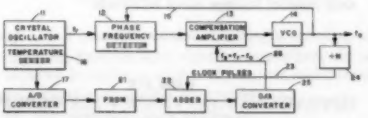
frequency control means connected to said detecting means and said generator, and capable of steering the frequency of said generator in such a way as to maximize the number of atoms (molecules) which undergo a transition from said first to said second level or energetic state while passing through said resonator.

4,454,483

TEMPERATURE COMPENSATION OF AN OSCILLATOR BY FRACTIONAL CYCLE SYNTHESIS

John T. Baylor, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Mar. 25, 1982, Ser. No. 361,726
Int. Cl.³ H03L *1/02, 7/08*
U.S. Cl. 331—11 **5 Claims**



1. A method for temperature compensation of an oscillator circuit having a crystal oscillator reference frequency f_r, said reference frequency having a base value f_{r1} at a reference temperature T_o, the output of said circuit being a predetermined stable frequency f_o, said method comprising the steps of:

cycling said crystal oscillator through a predetermined range of temperatures;

periodically sensing the instantaneous temperature of said crystal oscillator and providing an analog signal representing the temperature;

converting said analog signal to a digital signal;

detecting the instantaneous output frequency of said crystal oscillator for each said instantaneous temperature value and providing a digital signal representing said frequency;

feeding said digital temperature signal and said digital frequency signal into a computer;

generating a digital signal in said computer representing the instantaneous correlation between each said temperature and frequency signal;

recording said correlation signals in a programmable read only memory (PROM); then

connecting said crystal oscillator to an oscillator circuit comprising a phase frequency detector, a compensation amplifier and a voltage-controlled oscillator (VCO) connected together in a phase locked loop configuration, the output of said VCO being the predetermined stable compensated frequency f_o;

producing a digital signal representing the instantaneous temperature of said crystal oscillator;

addressing said PROM with said digital temperature signal to produce an output representing the frequency of said crystal oscillator at that temperature;

converting said PROM output signal to an analog signal in the form of a ramp voltage; and

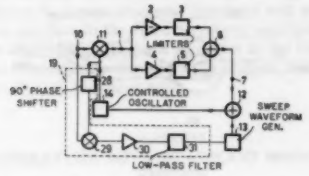
feeding said ramp voltage to said compensation amplifier to offset the circuit output frequency of said VCO by the frequency f_s of said ramp voltage, the frequency of said ramp voltage having a predetermined value at temperature T_o and changing inversely with temperature-caused changes of the crystal oscillator frequency to maintain the relationship $f_o = f_r - f_s$ where f_o is fixed.

4,454,484

PHASE-LOCKED LOOP INCLUDING AN AMPLIFIER CIRCUIT ARRANGEMENT

Stephen W. Watkinson, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,133
Claims priority, application United Kingdom, Jul. 2, 1980, 8021659
Int. Cl.³ H03L 7/00; H03F 3/68
U.S. Cl. 331—17 3 Claims



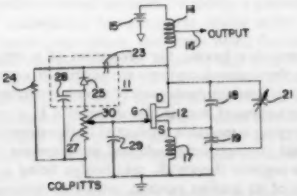
1. A phase-locked loop comprising a phase sensitive detector having first and second inputs and an output, means for feeding an input signal to the first input of the phase sensitive detector, a controllable oscillator, means for feeding the output of the oscillator to the second input of the phase sensitive detector, and means for coupling the output of the phase sensitive detector to a control input of the oscillator, characterized in that said coupling means comprises an amplifier circuit arrangement having an input for receiving said phase sensitive detector output, a first amplifier having a non-inverting input coupled to said input, a second amplifier having an inverting input also coupled to said input, and means for summing the output signals of said first and second amplifiers, an output of said summing means being coupled to an output of said arrangement, wherein the gains of said first and second amplifiers are unequal for low amplitude signals applied to said arrangement and said first and second amplifiers being arranged to produce substantially equal antiphase limited outputs for high amplitude signals applied to said arrangement, said coupling means further comprising means for adding the output of a sweep waveform generator to the output of the amplifier circuit arrangement and means for disabling the output signal of the sweep waveform generator when the phase-locked loop is locked.

4,454,485

LOW DISTORTION FET OSCILLATOR WITH FEEDBACK LOOP FOR AMPLITUDE STABILIZATION

Eldon M. Fisher, Acton, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 5, 1981, Ser. No. 290,264
Int. Cl.³ H03B 5/12
U.S. Cl. 331—109 8 Claims



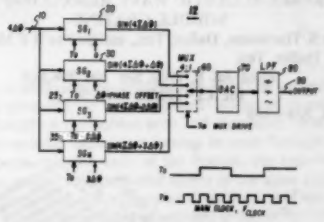
1. An oscillator comprising, in combination: a field effect transistor having drain, source and gate electrodes; direct voltage means connected between said drain and a common reference; inductive-capacitive circuit means connected to the source and one of the other electrodes to provide output oscillations at the drain electrode at a selected frequency, said inductive-capacitive circuit means including a coil connected from the source to said common reference and a pair of capacitors connected in series between said one electrode and said reference, said source and one end of said coil being connected to the junction of said series capacitors; feedback loop means including a third capacitor, a unilateral conducting device having a cathode and an anode, and first resistance means serially connecting the drain electrode to the gate electrode to provide a gate control voltage inversely proportional to the drain output voltage amplitude, said loop further including means for adjusting the portion of the output voltage from said drain electrode coupled to said gate electrode through said loop; a fourth capacitor connected between said anode and common reference in parallel with said first resistance means; and a second resistance means connected from said cathode to said common reference; said feedback means, fourth capacitor and said second resistance means acting to control and maintain the amplitude level of said oscillations below a level causing limiting.

4,454,486

WAVEFORM SYNTHESIS USING MULTIPLEXED PARALLEL SYNTHESIZERS

Roland Hassun, San Carlos, and Albert W. Kovalick, Santa Clara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 2, 1981, Ser. No. 317,220
Int. Cl.³ H03C 3/00; H03K 3/80, 7/06, 13/11
U.S. Cl. 332—16 R 17 Claims



1. An apparatus for synthesizing a waveform comprising:
first converter means for converting an applied phase increment signal into a plurality of parallel digital outputs representing points on a sine function, said plurality of digital outputs having phase offsets from one another determined in response to a plurality of phase offset signals generated from said applied phase increment signal; and
a first multiplexer coupled to said first converter means for selectively coupling each of said plurality of parallel digital outputs in a selected order to provide an ordered digital output representative of a synthesized waveform.

4,454,487

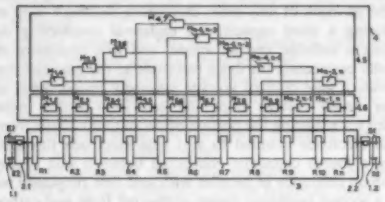
ODD ORDER SELF-CORRECTED ELECTRIC FILTERS

Corinne Darmouni, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 19, 1982, Ser. No. 360,003
Claims priority, application France, Mar. 20, 1981, 81 05658
Int. Cl.³ H03H 7/03, 7/075
U.S. Cl. 333—28 R 2 Claims

1. An odd order self-corrected electric filter with elements having localized constants comprising a first input and a second input, a first matching capacitor at the first input of the filter, five resonators in cascade, whereof a first is connected on the one hand to a first node and on the other to the second

input, each resonator being constituted by a capacitor in parallel with an inductance, the filter also comprising a first capacitor connected between the first and second resonators, a first and a second inductance respectively connected between the second and third resonators and the third and fourth resona-



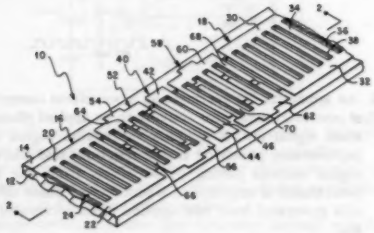
tors, a second capacitor connected between the fourth and fifth resonators, a third and a fourth capacitor connected respectively between the first and fourth resonators and the second and fifth resonators in order to bring about a self-correction of the envelope delay.

4,454,488

SURFACE ACOUSTIC WAVE RESONATOR WITH MIDDLE GRATING

Clinton S. Hartmann, Dallas, Tex., assignor to R F Monolithics, Inc., Dallas, Tex.

Filed Jul. 8, 1982, Ser. No. 396,418
Int. Cl.³ H03H *9/64, 9/25*
U.S. Cl. 333—195 **15 Claims**



15. A surface wave resonator device comprising in combination:

substrate means having at least a surface layer of piezoelectric material;

first and second reflective grating structures disposed on the piezoelectric surface of the substrate means defining a basic resonator for responding to acoustic surface waves propagating on the piezoelectric surface of the substrate means; and

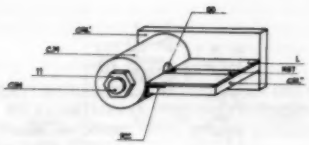
means defining a middle grating structure on the piezoelectric surface of the substrate means between the first and second reflective grating structures for responding to acoustic surface waves propagating on the piezoelectric surface of the substrate means wherein the middle grating structure is substantially non-reflecting at the center frequency for the first and second reflective grating structures.

4,454,489

TEMPERATURE STABILIZED MICROWAVE CAVITIES

Amedeo Donazzan, Carnate, and Enzo Pomé, Sesto S. Giovanni, both of Italy, assignors to TELETTRA - Telefonia Elettronica e Radio S.p.A., Milan, Italy

Filed Jul. 2, 1981, Ser. No. 279,936
Claims priority, application Italy, Jul. 16, 1980, 23476 A/80
Int. Cl.³ H01P *7/06, 1/207*
U.S. Cl. 333—227 **5 Claims**



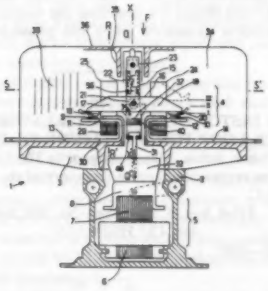
1. A resonant cavity comprising a hollow body of pure amorphous quartz covered with a first thin layer of highly conductive metal and a second thickening metal layer, and further comprising active circuit oscillator means and coupling means for coupling the resonant cavity to said oscillator means to stabilize the oscillator means frequency with respect to the cavity frequency.

4,454,490

CONTACTOR WITH THE PROPERTIES OF A CIRCUIT-BREAKER

Elie Belbel, 7 Chemin des Concessions, Residence les Lauriers, 92420 Vaucresson; André Haury, 75 Avenue Thiers, 93340 Le Raincy; Louis Féchant, 19 rue Albert ler, 78110 Le Vesinet, and Lucien Siffroi, 17 rue des Bourbonnais, 78000 Versailles, all of France

Filed May 29, 1981, Ser. No. 268,435
Claims priority, application France, May 30, 1980, 80 12086
Int. Cl.³ H01H *77/10*
U.S. Cl. 335—16 **8 Claims**



1. A contactor having the properties of a circuit breaker whenever short-circuit currents are generated, comprising, in a housing, two fixed contacts each of which is carried by one leg of a contact support bent in the shape of a U, a rigid contact bridge carrying a movable contact at both extremities thereof, each of said contacts being adapted to cooperate with a fixed contact in register therewith, said bridge being provided, on both sides of its median portion, with two opposed arms extending in register with said legs, whereas said median portion is so mounted as to slide in said housing from a position of rest at which said bridge is separated from the fixed contacts by an actuating member connected to an electro-magnet armature, and operating position at which said bridge is applied against

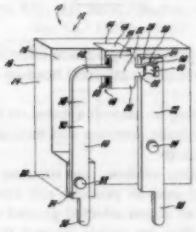
said fixed contacts by a resilient member, said contact bridge being capable of occupying a triggering position farther from said fixed contacts than said position of rest, whenever electro-dynamic repellent forces generated between said arms and legs are above a certain threshold, characterized in that the median portion (**21, 63**) of the contact bridge (**16, 60** respectively) cooperates with a magnetizable structure (**37, 75** respectively) energized by the current flowing through the bridge, said structure being inserted between the actuating member (**31, 74** respectively) and said median portion and being directed so as to apply on said median portion compensating electro-magnetic forces F_2 lower than said threshold and acting in the direction opposite to the electro-dynamic repellent forces, on the one hand, and in the same direction as the initial contact pressure forces F_1 transferred by the resilient member (**22, 69** respectively), on the other hand.

4,454,491

TEMPERATURE SENSING CIRCUIT BREAKER OR SWITCH

Charles R. Martus, Redford Township, Wayne County, Mich., assignor to Allied Corporation, Morris Township, Morris Co., N.J.

Filed May 10, 1982, Ser. No. 376,360
Int. Cl.³ H01H *51/00*
U.S. Cl. 335—208 **4 Claims**



1. A switch, comprising:

a base member having a substantially-planar portion having a first surface and a projection portion projecting from said first surface;

an electrically-conductive contact stationary member being permanently attached to said first surface, said stationary terminal member having a connection portion for connection to an electrical circuit;

a magnet fixedly disposed upon said first surface of said planar portion;

a resilient electrically-conductive moveable contact member having a connection portion for connecting to said electrical circuit and a mounting portion fixedly attached to said projecting portion, and a contact portion adapted to contact said stationary contact member;

said moveable contact member including a plurality of layers of amorphous ferromagnetic metal strips having a Curie point temperature, said strips being fastened to said moveable contact member adjacent said magnet;

said plurality of strips of said amorphous ferromagnetic material being attracted to said magnet when said amorphous material is at a temperature below said Curie point temperature, and urging said contact portion of said moveable contact member against said stationary contact member;

said resilient moveable contact member urging said contact portion away from said stationary contact member and moving said contact portion away from said stationary member when said amorphous material is above said Curie point temperature;

said moveable contact member being an L-shaped member having a first portion and a second portion perpendicular to said first portion;

said first portion having a portion affixed to said projecting portion;

said second portion including said contact portion at an end thereof;

said second portion defining a widened portion, said widened portion defining bendable tabs folded about said plurality of layers of amorphous material;

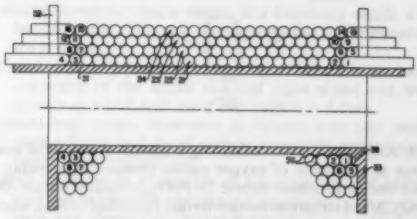
whereby an electrical connection exists between said connector portion of said stationary contact member and said connector portion of said moveable contact member only when said amorphous material is at a temperature below said Curie point temperature.

4,454,492

LOW INTRA-WINDING CAPACITANCE MULTIPLE LAYER TRANSFORMER WINDING

Philip C. Thackray, Gibsonia, Pa., assignor to Laser Drive, Inc., Gibsonia, Pa.

Filed Apr. 14, 1982, Ser. No. 368,115
Int. Cl.³ H01F *15/14, 27/30*
U.S. Cl. 336—69 **12 Claims**



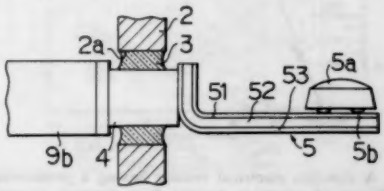
1. In a multiple layer transformer winding comprising a bobbin, a plurality of superimposed layers of round wire closely wound on the bobbin core and extending from end to end of the bobbin, each layer having its ends brought out as leads through opposite ends of the bobbin, the improvement comprising evenly superimposed layers of the same number of turns of wire of the same diameter d, each turn of each layer above the bottom layer being positioned in the furrow between abutting turns of the layer below and each lead being parallel to the lead below but displaced therefrom in the same direction parallel to the bobbin core surface by substantially d/2.

4,454,493

HERMETICAL TYPE THERMALLY RESPONSIVE SWITCH

Susumu Ubukata, 549 Nakasuna-cho,, Tenpaku-ku, Nagoya, Japan; Yasukazu Mizutani, and Syozo Iyoda, both of Nagoya, Japan, assignors to Susumu Ubukata, Nagoya, Japan

Filed Sep. 20, 1982, Ser. No. 420,006
Int. Cl.³ H01H *37/54*
U.S. Cl. 337—368 **6 Claims**



1. In a hermetic type, thermally responsive switch including

a cup-like vessel hermetically sealed by a cap, a fixed contact carried upon the free end of a first cantilever support disposed in said vessel, an elongated, second cantilever support disposed in said vessel, the fixed ends of said first and second cantilever supports being positioned at the same end of said vessel, a thermally responsive, disk-like element carried at one end by said second cantilever support and having on the other end a movable contact to engage with and disengage from said fixed contact when snapped by said disk-like element in response to temperature changes, the improvement which comprises having said first cantilever support formed of laminated composite elements having different elastic moduli.

4,454,494

OXYGEN SENSORS

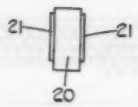
David E. Williams; Bruce C. Tofield, both of Abingdon, and Peter McGeehin, Newbury, all of England, assignors to Lucas Industries plc, Birmingham, England

Filed Apr. 5, 1982, Ser. No. 365,401

Claims priority, application United Kingdom, Apr. 7, 1981, 8110921

Int. Cl.³ G01N *27/12*

U.S. Cl. 338—34 **13 Claims**



1. An oxygen sensor exhibiting a change in electrical resistance as a function of oxygen partial pressure, comprising at least one of strontium ferrate ($SrFeO_{3-x}$), barium ferrate ($BaFeO_{3-x}$), and strontium barium ferrate ($Sr_{1-b}Ba_bFeO_{3-x}$), where 3-x indicates an oxygen deficiency in the oxide and b is 0 to 1, in which 10 to 70 atomic percent of the iron in the ferrate lattice has been replaced by at least one element selected from the group consisting of titanium, cerium, tantalum and noibium.

4,454,495

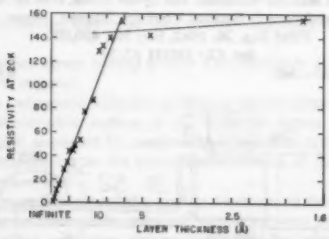
LAYERED ULTRA-THIN COHERENT STRUCTURES USED AS ELECTRICAL RESISTORS HAVING LOW TEMPERATURE COEFFICIENT OF RESISTIVITY

Thomas R. Werner, Argonne, Ill.; Charles M. Falco, Tucson, Ariz., and Ivan K. Schuller, Woodridge, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 31, 1982, Ser. No. 413,637

Int. Cl.³ H01C *10/00*

U.S. Cl. 338—195 **8 Claims**



1. A thin-film electrical resistor having a predetermined coefficient of resistance ranging from negative to positive ppm/K comprising: a coherent, multilayer crystal consisting of alternating layers of two metallic elements, the two elements being selected from the group of copper and niobium, nickel and tungsten and nickel and molybdenum, the layers being of about the same thickness, each layer consisting of a single crystalline element at least 2 Å in thickness to form a resistor having a negative temperature coefficient to resistance increasing to 0 and becoming positive as the layer thickness is increased.

4,454,496

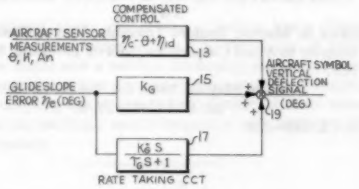
CONFORMAL HEAD-UP DISPLAY

James R. Lowe, Rancho Palos Verdes, Calif., assignor to McDonald Douglas Corporation, Long Beach, Calif.

Filed Oct. 30, 1980, Ser. No. 202,167

Int. Cl.³ G08G *5/00*; G01S *1/16*

U.S. Cl. 340—980 **21 Claims**



1. Apparatus for providing guidance information to an aircraft pilot in the form of a conformal head-up display (HUD) which comprises:

means for generating an aircraft symbol on the display that simulates the attitude, location and motion of his aircraft relative to the earth;

means for generating symbols that simulate on the display selected ground cues in position and orientation which superimpose over actual selected ground cues as seen by the pilot when they are visible through the display;

means for generating an aim symbol that is positioned on the display to provide a reference to which the aircraft symbol is directed for proper operation of the aircraft in selected flight modes;

means for controlling the position of the aircraft symbol and the aim symbol in response to selected signal inputs to provide vertical guidance information in different phases of a landing approach from above transition height, through transition to flare height, and thence to touchdown;

means for switching control of the aircraft symbol and of the aim symbol from one phase to the next; and

means for providing a smooth transition from one set of selected signal inputs to the next as the aircraft descends through the respective phases.

4,454,497

AUTOMOBILE BRAKE PEDAL CONTROL

John F. Morse, 1699 Hines Hill Rd., Hudson, Ohio 44236

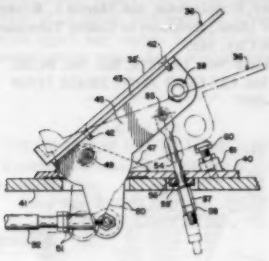
Filed Jan. 18, 1982, Ser. No. 340,383

Int. Cl.³ B60Q *1/00*; G05G *1/14*

U.S. Cl. 340—52 R **9 Claims**

1. In an automotive vehicle having an accelerator pedal adapted for operation by the right foot of the driver and a brake pedal adapted for operation by the left foot of the driver, the improvement comprising means operably connected to said brake pedal to direct a pneumatic counterbalancing force opposing the effective weight of the driver's left leg and foot

when resting on said brake pedal, pressure regulator means for adjusting the counterbalancing force, and means for signaling



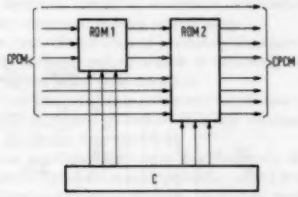
operation of said brake pedal in excess of said counterbalancing force.

4,454,498

ADJUSTABLE ATTENUATION MEMBER FOR A DIGITAL TELECOMMUNICATIONS SYSTEM

Gary D. Southard, Coral Springs, Fla., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,705
Int. Cl.³ H03K *13/00*
U.S. Cl. 340—347 DD **1 Claim**



1. In an adjustable attenuation device for altering the amplitude of a signal, the amplitude of said signal being represented by a digital word in bit-parallel fashion, the combination comprising,

a first memory having a plurality of storage locations and a plurality of address inputs for receiving signals identifying individual ones of said storage locations,

means for connecting said address inputs to receive a first plurality of bits from said digital word,

said first memory storing at each of said storage locations a stored word representing an amplitude level,

said first memory having a plurality of outputs and being adapted to produce on said outputs signals corresponding to the stored word stored at the storage location identified by signals at the address inputs of said first memory, and

a second memory having a plurality of storage locations and a plurality of address inputs for receiving signals identifying individual ones of said storage locations,

means for connecting some of said address inputs to said outputs of said first memory and for connecting others of said address inputs to receive a second plurality of bits from said digital word,

said second memory storing at each of said storage locations a stored word representing an amplitude level,

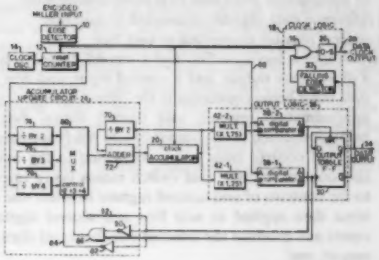
said second memory having a plurality of outputs and being adapted to produce on said outputs signals corresponding to the stored word stored at the storage location identified by signals at the address inputs of said second memory.

4,454,499

DIGITAL MILLER DECODER

John M. Yarborough, Jr., Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Dec. 21, 1981, Ser. No. 332,612
Int. Cl.³ G06F *3/00*
U.S. Cl. 340—347 DD **12 Claims**



1. In a Miller decoder for decoding Miller encoded input signals comprising a data stream having signal transitions at 1, 1½ and 2 time intervals, the combination comprising,

resettable counter means driven at a frequency which is a large multiple of the base frequency of the Miller encoded input signal,

digital storage means for storing a count related to the base frequency of the Miller encoded input signal and frequency at which said resettable counter is driven,

output logic means responsive to outputs from said resettable counter and signal storage means for producing a binary signal output, and

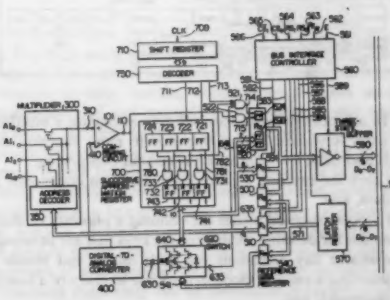
clock logic means responsive to transitions in said Miller encoded input signal and selected transitions in the output from said output logic means for producing a data clock output for use in clocking the binary signal output from said output logic means, said binary signal output together with said data clock output manifesting the decoded Miller encoded input signal.

4,454,500

ANALOG DATA ACQUISITION DEVICE

Kazuo Kato, Ibaraki; Nobuaki Miyakawa; Makoto Aihara, both of Hitachi, and Kiyoshi Matsubara, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 114,390, Jan. 22, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 348,666
Claims priority, application Japan, Jan. 26, 1979, 54-7911
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **4 Claims**



1. An analog data acquisition device comprising:

a multiplexer for fetching a plurality of data in time-division;

a two-input comparator for comparing a signal successively applied from said multiplexer to one input thereof with a reference value applied to the other input thereof;

a data bus;

means for transferring a result of comparison of said two-input comparator to said data bus;

a successive approximation register for receiving the result of comparison from said two-input comparator;

a reference data register connected to said bus;

a control register connected to said bus;

switch means having a first and a second digital data input, a digital data output, and a control input, said first digital data input being connected to the output of said successive approximation register, said second digital data input being connected to the output of said reference data register, said control input being connected to the output of said control register, said switch means being responsive to the contents of said control register to select one of two input data applied to said first and second digital data inputs and produce the selected one from said digital data output; and

a digital-to-analog converter connected to said digital data output of said switch means for converting the digital data produced therefrom into analog data and for producing the analog data as said reference value.

4,454,501

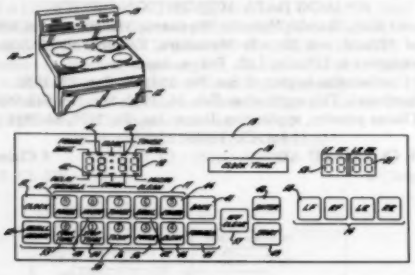
PROMPTING CONTROL

Orville R. Butts, West Lafayette, Ind., assignor to Roper Corporation, Kankakee, Ill.

Continuation of Ser. No. 172,252, Jul. 25, 1980, Pat. No. 4,341,197. This application May 10, 1982, Ser. No. 376,403

Int. Cl.³ G08C *9/00*; **F24C** *3/08*; **H05B** *3/68*

U.S. Cl. 340—365 R **10 Claims**



1. In a processor-based control system having a multifunction entry keyboard for an operator to enter function commands and data, the control arrangement comprising:

(a) keys for entering a plurality of function commands and data, and

(b) processor-based means for defining a plurality of modes, means for defining a subset of the keys that are permissible operator key selections for each mode, and means for selecting a current mode in response to entry of a function command, and

(c) means for directing the operator's attention to the actual physical location of the subset of keys that are permissible operator key selections for the selected mode.

4,454,502

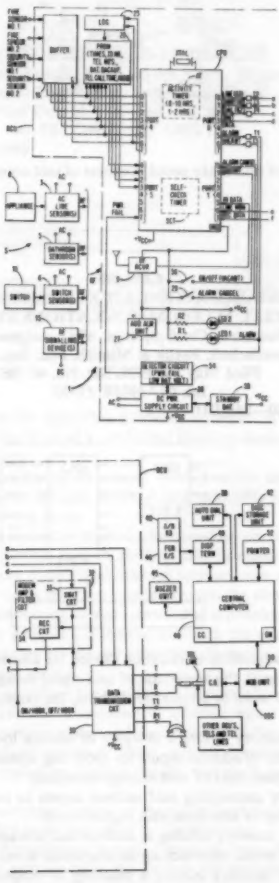
APPARATUS FOR MONITORING AND SIGNALLING SYSTEM

Robert J. Fahey, Framingham, and Martin L. Resnick, Chestnut Hill, both of Mass., assignors to United Telecommunications, Inc., Kansas City, Mo.

Filed Nov. 14, 1979, Ser. No. 94,242

Int. Cl.³ G08B *29/00*; **H04M** *11/04*

U.S. Cl. 340—507 **23 Claims**



1. In a monitoring and signalling system, apparatus comprising:

ac-powered sensor means powered by an ac voltage, said ac-powered sensor means being operative to monitor the occurrence of an activity and in response to monitoring the occurrence of the activity and in the presence of an ac voltage to produce a signal indicative of the occurrence of the activity, said ac-powered sensor means being further susceptible to producing a signal indicative of the occurrence of the activity in response to a restoration of ac voltage following an absence of said ac voltage; and

signal detection and processing means for receiving and processing signals produced by the ac-powered sensor means, said signal detection and processing means being arranged to detect the presence and absence of the ac voltage and a restoration of the ac voltage following an

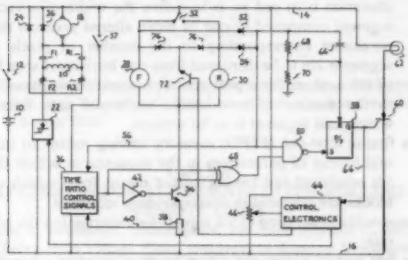
absence of said voltage and operative when the ac voltage is present to process signals received thereby from the ac-powered sensor means, and further operative when the ac voltage is restored following an absence of the ac voltage to reject any signals received thereby from the ac-powered sensor means for a predetermined interval of time.

4,454,503

TRANSISTOR FAULT INDICATOR

Charles E. Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Sep. 3, 1981, Ser. No. 299,047
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—648 **9 Claims**



6. A fault detection circuit for a normally conductive transistor regulating current to a load, comprising:

first means providing a train of periodic pulses having a time duration between pulses which is relatively long with respect to the pulse time duration;

second means receiving said pulses and responsive thereto to cause said transistor to switch to a non-conductive state during said pulse time duration;

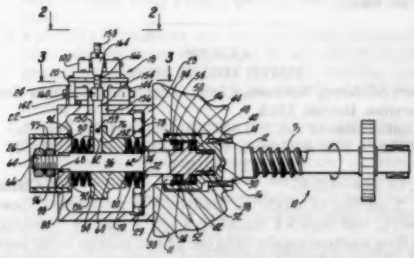
logic means simultaneously receiving said train of periodic pulses and a signal from said transistor which is indicative of the conductive state thereof, said logic means being responsive to said pulses and said signal to produce an output signal indicative of a fault in said transistor whenever said transistor remains in a conductive state simultaneously with the occurrence of said pulse time duration.

4,454,504

TORQUE OVERLOAD INDICATOR

Armin E. Jocz, Ada, Mich., assignor to Westran Corporation, Sparta, Mich.

Filed Sep. 18, 1981, Ser. No. 303,506
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—665 **12 Claims**



1. For use with an actuator having an actuator shaft, a device for indicating when the torque on said actuator shaft exceeds a limit comprising:

a housing,

a limit switch and means for attaching said limit switch to said housing,

means movable in an amount proportional to the torque on the actuator shaft,

means carried by said movable means for activating said limit switch when said torque exceeds said limit, said activating means including means for varying said limit,

means for indicating activation of said limit switch, and

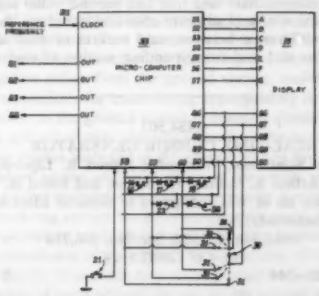
wherein said movable means comprises a radially extending member with respect to said actuator shaft, means for converting axial force on said actuator shaft to movement of said member axially with respect to said actuator shaft, said member having a portion positioned adjacent said limit switch.

4,454,505

DATA ENTRY SYSTEM FOR MICRO-COMPUTER BASED CONTROLLERS

Ralph P. Harney, Wonder Lake, and Clifford E. Mensing, Glen Ellyn, both of Ill., assignors to Intermatic Incorporated, Spring Grove, Ill.

Filed Jul. 6, 1981, Ser. No. 280,532
Int. Cl.³ G09G *3/00*
U.S. Cl. 340—712 **7 Claims**



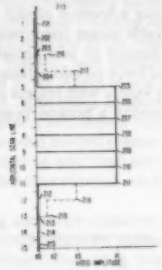
1. In a data entry system for use in programming a microcomputer, the combination comprising: a display panel having a window opening therein, digital display means mounted behind said panel and operably visable through said window opening, a member having plural data entry legend means mounted for movement across said window opening, manually operable means for moving said member across said window opening whereby to selectively present each said legend means thereon, one at a time and in any desired order or sequence, at said window opening in cooperating visual adjacency with said display means, and means actuated simultaneously with movement of said member by said manually operable means for enabling data entry for an individual program mode restricted to a selected legend means positioned adjacent said display means, whereby data for said mode may be entered in the micro-computer and visually recorded on said display means in correlation with said selected legend means.

4,454,506

METHOD AND CIRCUITRY FOR REDUCING FLICKER IN SYMBOL DISPLAYS

Arun N. Netravali, Westfield, N.J., and Peter Pirsch, Hanover, Fed. Rep. of Germany, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 4, 1981, Ser. No. 299,531
Int. Cl.³ G09G 1/16
U.S. Cl. 340—728 **15 Claims**



1. A distortionless method of reducing flicker which occurs at the horizontal boundaries of a symbol displayed in a line scanned interlaced-field display caused by differences between a video signal of a scan line defining the horizontal boundary of the symbol and a video signal of an adjacent non-symbol scan line

characterized by the steps of:

detecting when a difference between a first video signal of a section of said adjacent scan line differs from a second video signal of a corresponding section of said symbol scan line by a predetermined non zero amount which indicates a horizontal boundary of said symbol and

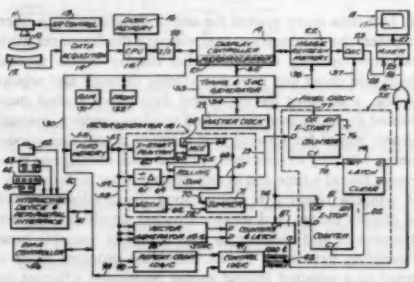
generating in response to the detecting step a third video signal intermediate said first and second video signal for said section of said adjacent scan line to reduce the video signal difference between said section of said adjacent scan line and said corresponding section of said symbol scan line.

4,454,507

REAL-TIME CURSOR GENERATOR

Nallaswamy Srinivasan, Waukesha; Robert R. Lijewski, Milwaukee; Arthur K. Collins, Waukesha, and Royal R. Morse, III, Wales, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,751
Int. Cl.³ G09G 1/14
U.S. Cl. 340—744 **7 Claims**



1. In a system including a television monitor having an image forming beam scanning its screen in a raster pattern and having input means for video signals representative of a succession of picture elements (pixels) provided at a fixed rate to produce the image in the horizontal scan lines and for signals that alter the intensity of the beam for writing a cursor on the screen, and improved means for producing cursors, comprising:

processor means,

a readable memory coupled to the processor means for storing one or more programs for controlling said processor means to produce one or more blocks of parameters in digital number form representative, respectively, of the presence or absence of the one or more vectors that compose a cursor on the screen,

each block containing an x-start parameter representative of the location on a horizontal line where intensity alteration of one or more successive pixels is to begin, a width parameter representative of the location on the line where alteration is to end so as to define the width of a vector segment composed of one or more altered pixels, a delta parameter corresponding to the number of pixels the segments are to be displaced from one horizontal scan line to the next, and a repeat count parameter corresponding to the number of consecutive horizontal scan lines in which said segment is to be written,

a first-in first-out (FIFO) memory having means to input said blocks of parameters in the sequence in which they are produced and having output means from which said blocks are readable in corresponding sequence,

means for generating clock signals for determining the pixel rate,

a first pair of x-start and x-stop position counters controlled by said clock signals to count at said pixel rate,

circuit means interposed between the counters and FIFO memory including means for performing arithmetic and control operations and for counting said repeat count until the number of horizontal lines equal to the repeat count is attained, said circuit means having registers into which a first set of parameters in a block at the output of said FIFO memory are read in parallel fashion, said counters being loaded from said circuit means with the x-start and x-stop parameter values when the first horizontal blanking interval occurs following reading of said parameters into the registers for said counters to start counting at the pixel rate when said blanking interval ends, counting by said x-start counter of the number of pixels corresponding to the x-start value effecting said alteration of the intensity of the beam and counting by said x-stop counter of the number of pixels corresponding to the x-stop value effecting termination of said alteration,

said circuit means being operative to add the delta parameter value to the x-start and x-stop values for a preceding horizontal line and to load the results into the respective counters during the succeeding horizontal blanking interval to effect similar alterations of the beam, said counters being loaded with x-start and x-stop values a number of times equal to the value of the repeat count parameter in the block.

4,454,508

TIMED TOKEN RING

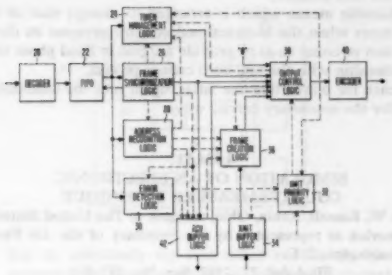
Robert M. Grow, Newtown, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 355,021, Mar. 5, 1982, Pat. No. 4,404,557. This application May 31, 1983, Ser. No. 499,307
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.05 **26 Claims**

1. A method of allocating bandwidth in a communications network, said network including a set of stations providing data flow unidirectionally from one of said stations to the next, each of said stations being capable of passing data through itself, extracting data or injecting data, the right of each of said stations to source new information onto the network con-

trolled by passing a write token from one of said stations to another, said method comprising the steps of:

a. each of said stations timing the rotation time of the write token to measure instantaneous load; and



b. each of said stations limiting the transmission of information onto the network based on the observed write token rotation time.

4,454,509

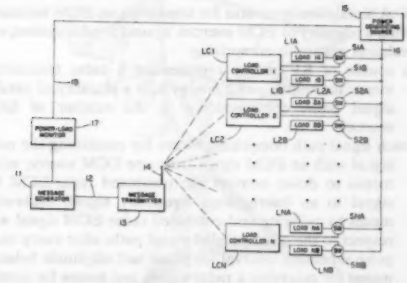
APPARATUS FOR ADDRESSABLY CONTROLLING REMOTE UNITS

James A. Buennagel, Indianapolis, Ind., and Richard C. Koch, Cherry Hills Village, Colo., assignors to Regency Electronics, Inc., Indianapolis, Ind.

Division of Ser. No. 125,285, Feb. 27, 1980, Pat. No. 4,352,992. This application Jul. 19, 1982, Ser. No. 399,349

Int. Cl.³ G08B *23/02*; G01R *21/00*

U.S. Cl. 340—825.69 **15 Claims**



1. A system incorporating a plurality of separately addressable receivers comprising:

a. central message generator means for transmitting coded messages, said messages including a plurality of bits, for each bit there being a first logic state and a second logic state;

b. a plurality of receivers, said receivers being responsive to said coded messages transmitted by said central message generator means, each of said receivers including means for responding to command indications from said central message generator means;

c. each of said receivers having a preprogrammed zone code identifier and a preprogrammed address code identifier;

d. said messages including a zone code set and a command-/address code set, said zone code set including means for identifying a zone; said command/address code set including means for indicating a command and means for identifying an address indication; and

e. each of said receivers including means for causing said receiver to be responsive to said command/address code set only when the last received zone code message has identified the preprogrammed zone identifier of that receiver and the command/address message indicates the address identifier of that receiver.

4,454,510

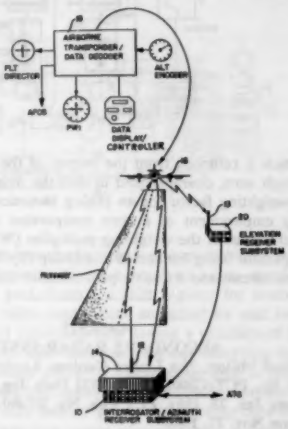
DISCRETE ADDRESS BEACON, NAVIGATION AND LANDING SYSTEM (DABNLS)

Robert P. Crow, 15464 Hamner Dr., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 970,756, Dec. 18, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,174

Int. Cl.³ G01S *13/00*

U.S. Cl. 343—5 GC **26 Claims**



1. In combination: a ground station including a first transmitter for transmitting omnidirectionally discretely addressed code interrogation pulses to each of a plurality of aircraft in the vicinity of the ground station containing position data concerning each of the aircraft; a transponder mounted in each of the aircraft including a receiver for receiving and decoding coded interrogation pulses from the ground station, and including a second transmitter for transmitting appropriately timed coded reply pulses to the ground station containing altitude, discrete address, and other data concerning each of the aircraft; and a receiving system included in the ground station for measuring the incident angles and time delay of the reply pulses with respect to the interrogation pulses, computer means included in the receiving system for determining slant-range correction and for providing navigational data including the latitude/longitude coordinates of the aircraft in the vicinity of the ground station thereby to provide data at the ground station relating to the position of each aircraft for use at the ground station and for transmission to each of the aircraft by said first transmitter.

4,454,511

PULSE DOPPLER RADAR WITH FIXED TARGET ECHO REJECTION CIRCUIT FORMED OF RECURSION FILTERS

Rainer Peters, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,575

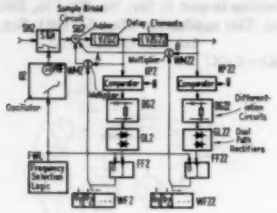
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033382

Int. Cl.³ G01S *13/50*

U.S. Cl. 343—7.7 **9 Claims**

3. A pulse Doppler radar with a range gate circuit and with a fixed target echo rejection circuit, consisting of recursion filters with at least one delay element which has a return loop

wherein weighting of the recursion signals occurs and upon a change of the pulse repetition frequency (PRF) the weighting factors are changed by means of a weighting multiplier, characterized in that the switching of the weighting factors (a, b, c . . .) corresponding to each pulse repetition frequency occurs at a delayed time after a change of the pulse repetition frequency at the time at which the recursion signal (A, B, C . . .



) which is returned from the output of the delay line passes through zero, characterized in that the delayed switching of the weighting factor for an analog recursion filter occurs by using employment of a zero comparator connected to the signal output of the weighting multiplier (WM), and said zero comparator being connected to a D-flip-flip through a differentiation circuit and a double path rectifier circuit.

4,454,512

SECONDARY RADAR SYSTEM

Michael Millett, 79A Linden Gardens, London, W2, England

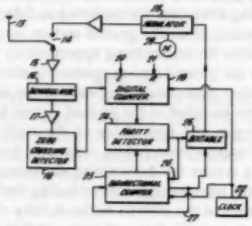
PCT No. PCT/GB80/00093, 371 Date Jan. 23, 1981, 102(e) Date Jan. 23, 1981, PCT Pub. No. WO80/02601, PCT Pub. Date Nov. 27, 1980

PCT Filed May 23, 1980, Ser. No. 233,608

Claims priority, application United Kingdom, May 23, 1979, 7917938

Int. Cl.³ G01S *13/84*

U.S. Cl. 343—12 R **1 Claim**



1. A distance measuring system comprising a first measuring station which includes means for transmitting a first modulated carrier wave, means for receiving a second modulated carrier wave and means for comparing the phases of the modulations of the first and second waves to derive an indication of distance; and a second measuring station which comprises:

means for receiving the first modulated carrier wave;

means for retransmitting the second modulated carrier wave, the modulation of the second carrier wave being in phase with the modulation of the primary carrier wave; and means for preserving the phase of the modulation of said first carrier wave for a longer period than the reception of that modulation by the second station, which preserving means comprises:

a zero crossing detector responsive to the primary carrier wave to derive time impulses;

a source of clock pulses;

a first digital counter for accumulating clock pulses under the control of the said time impulses;

a bi-directional counter which is arranged to increment and decrement alternately with a count corresponding to that accumulated in an interval between said time impulses by the first counter;

a bistable means which is arranged to change state at the times when the bi-directional counter reverses its direction of count so as to provide a signal in fixed phase relationship with the said zero crossings; and,

means for converting the latter signal into the modulation for the secondary carrier wave.

4,454,513

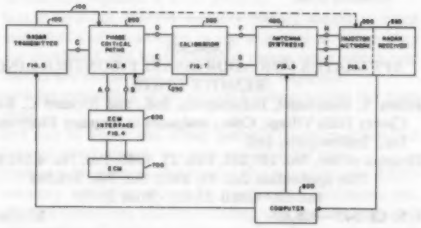
SIMULATION OF AN ELECTRONIC COUNTERMEASURE TECHNIQUE

John W. Russell, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 287,451

Int. Cl.³ G01S *7/36*

U.S. Cl. 343—18 E **4 Claims**



1. A simulation apparatus for simulating an ECM technique having a plurality of ECM sources, against a radar system, said simulation apparatus comprising:

a source of RF energy representing a radar transmitter; means for splitting said energy into a plurality of parallel signal paths corresponding to the number of ECM sources;

each signal path comprising means for combining the radar signal with an ECM signal from one ECM source; mixer means to down convert the combined radar-ECM RF signal to an intermediate frequency signal; calibration means to calibrate said combined radar-ECM signal with respect to the other parallel signal paths after every radar pulse repetition interval for phase and amplitude balance; means for receiving a radar signal; and means for synthesizing a radar receive antenna pattern at an intermediate frequency coupled between the calibration means and the means for receiving a radar signal.

4,454,514

STRIP ANTENNA WITH POLARIZATION CONTROL

Kiyohiko Itoh, Sapporo; Yoshihiko Mikuni, Kamakura, and Kensei Sugita, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 26, 1982, Ser. No. 371,927

Claims priority, application Japan, May 14, 1981, 56-72591; May 14, 1981, 56-72592

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **10 Claims**

1. A strip antenna which comprises:

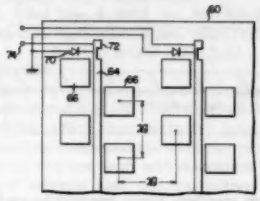
a dielectric substrate;

a strip line which is formed of a conductive film and on said dielectric substrate, and one of whose ends is used as a power supply terminal;

an antenna element which is formed of a conductive film,

provided on said dielectric substrate in the proximity of the other end of the strip line, and is electromagnetically coupled to said strip line; and

switching means connected to said other end of said strip



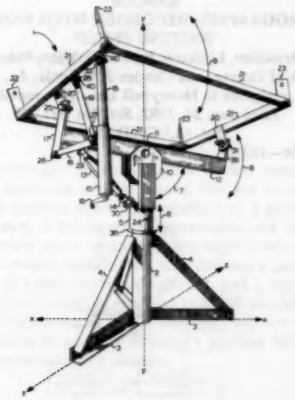
line to selectively set said other end at an open or grounded state to change the distribution of current and voltage impressed on said strip line, thereby varying the mode in which said strip line is electromagnetically coupled to said antenna element.

4,454,515

ANTENNA MOUNT

Johnny D. Major, Rte. 2, Box 174, Claremont, N.C. 28610, and Granville M. Major, Jr., Rte. 2, Box 38A, Bean Station, Tenn. 37708

Filed Sep. 30, 1982, Ser. No. 431,723
Int. Cl.³ H01Q *3/04*
U.S. Cl. 343—882 **15 Claims**



1. A mount for use with a dish type antenna for variably positioning an antenna towards a predetermined point in the heavens comprising:

(a) an upstanding base means;

(b) a means attached to said upstanding base means for rotationally positioning the antenna about or along the vertical axis of the mount;

(c) an elongated cross member attached to the means of subparagraph (b), for variably positioning the antenna in the plane formed by the longitudinal axis of said elongated cross member and the mount's vertical axis; and,

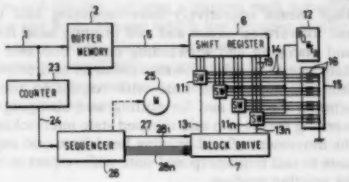
(d) a linkage frame means, attached to the elongated cross member for variably positioning the antenna about the longitudinal axis of said cross member, said linkage frame means comprising a frame pivotally attached to said elongated member; a jack pivotally attached to said elongated member and to said frame; and, first and second linkage arms both pivotally attached to said jack and one to said frame and the other to said elongated member.

4,454,516

HEAT-SENSITIVE RECORDING DEVICE

Haruhiko Moriguchi; Takashi Ohmori, and Toshiharu Inui, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 358,951
Claims priority, application Japan, Mar. 19, 1981, 56-38712
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **11 Claims**



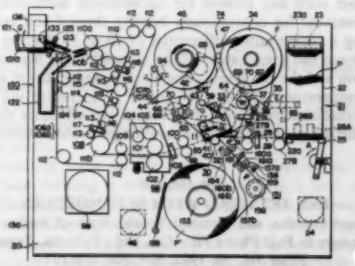
1. A heat-sensitive recording device, comprising: a buffer memory for temporarily storing a received video signal applied to an input port thereof; a shift register for storing a unitary group of video signal data outputted by said buffer memory; a thermal recording head having a plurality of heat generating elements, said head carrying out recording in response to said unitary group of video signal data in one or plural printing operations; means for determining a proportion of data values in said unitary group representing dots to be printed, said determining means receiving and operating in response to said video signal applied to said input port of said buffer memory; and sequencer means for controlling a proportion of said heat generating elements activated at a time in accordance with a determination result provided by said determining means.

4,454,517

PRINTING APPARATUS WITH COACTING PRINTER HEAD MOVEMENT AND PAPER ADVANCEMENT

Koji Kagaya, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 26, 1982, Ser. No. 382,117
Claims priority, application Japan, May 29, 1981, 56-82019
Int. Cl.³ G01D *15/28, 15/10*
U.S. Cl. 346—136 **8 Claims**



1. A printing apparatus which comprises:

sheet-supply means for supplying a sheet;

transfer printing means including a printing head moveable between superposed and nonsuperposed positions with respect to a tranfer printing medium provided with a

dyestuff on the surface of a sheet delivered by said sheet-supply means and for transferring a dyestuff corresponding to a pattern of data from the transfer printing medium to the surface of the sheet;

transfer printing medium supply means having a feed side including a feed reel and a takeup side including a takeup reel to forward the tranfer printing medium to the transfer printing means;

clamping and forwarding means for clamping and forwarding the transfer medium, said clamping and forwarding means being provided on both said feed and takeup sides of the transfer printing medium supply means to hold said transfer printing medium in a clamped state and release said medium from the clamped state to a released state; and

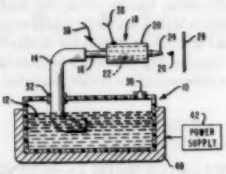
linkage means operatively interconnecting said clamping and forwarding means and said printing head for putting said clamping and forwarding means into said clamped state interlockingly with movement of said printing head into said superposed state with respect to the transfer printing medium and for putting said clamping and forwarding means into said released state interlockingly with the movement of said printing head from said superposed state to said nonsuperposed state with respect to the transfer printing medium.

4,454,518

TEMPERATURE CONTROL OF INK FOR INK JET PRINTER

Richard G. Bangs, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed May 12, 1982, Ser. No. 377,655
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **2 Claims**



1. Means for reducing formation of gaseous bubbles in the ink of an ink jet printer comprising a

reservoir containing a supply of ink, a

piezoelectric transducer operably associated with and carried by said reservoir for ejecting ink in droplet form onto record media, and a

constant wattage conduction-type heater operably associated with and formed for substantially surrounding the reservoir for continuously heating thereof and establishing a temperature differential of 10 to 15 degrees C. between the temperature of the ink within the heated reservoir and the ink in said piezoelectric transducer at ambient temperature whereby the lower temperature ink in the transducer by reason of increased gas solubility dissolves bubbles present or which may be generated therein.

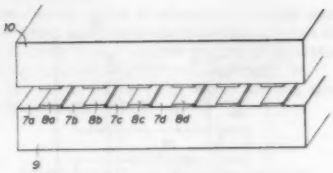
4,454,519

INK JET HEAD WITH SLIT NOZZLES

Shigenori Oosaka, and Katutosi Tozaki, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Saitema, Japan

Filed Jul. 20, 1982, Ser. No. 400,107
Claims priority, application Japan, Jul. 24, 1981, 56-116232
Int. Cl.³ G01D *15/18*; B41J *3/04*
U.S. Cl. 346—140 R **6 Claims**

1. An ink jet nozzle head comprising a first nozzle head member having a surface on which hydrophilic sections of a predetermined width and water repellent sections of a predetermined width are formed alternately and in parallel with one another, and a second nozzle head member having a surface of the same configuration as said surface of said first nozzle head



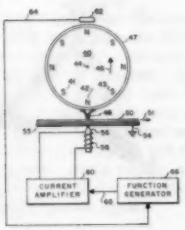
member, the two members being opposed to each other to form a very small space between said surfaces thereof, whereby a plurality of nozzles are formed along said hydrophilic sections.

4,454,520

ELECTROGRAPHIC RECORDER WITH ENHANCED WRITING SPEED

Boyce D. Braschler, Littleton; Paul A. Diddens; Roger D. Erickson, both of Denver, and Charles J. O'Toole, Jr., Aurora, all of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 24, 1982, Ser. No. 391,799
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **11 Claims**



1. In an electrographic recorder which includes a rotating magnet, magnet toner particles which cyclically stand up and lie down as the magnet rotates, and recording medium movable near the toner particles so that the toner particles touch one side of the medium over a small area when the particles stand up, enabling recording, and do not touch the medium when the particles lie down, preventing recording, the improvement comprising:

a magnetic member having a size in the order of the size of the small area; and

means mounting the member proximate the small area but on the side of the medium opposite the one side, the member operating to cause the toner particles to stand up for a significantly greater portion of the cycle than they lie down.

4,454,521
DIAZO-TYPE THERMOSENSITIVE RECORDING MATERIAL

Yoshihiro Suguro, Mishima; Masanaka Nagamoto, Sunto; Takanori Motosugi; Yoshihiko Hotta, both of Numazu, and Toshiyuki Watanabe, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

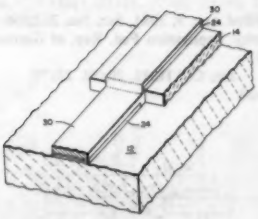
Filed Mar. 8, 1982, Ser. No. 356,076
Claims priority, application Japan, Mar. 14, 1981, 56-37091
Int. Cl.³ B41M 5/18, 5/22
U.S. Cl. 346—208 15 Claims

1. In a diazo-type thermosensitive recording material comprising a support material and a thermosensitive coloring layer formed thereon, which thermosensitive coloring layer comprises a diazonium compound and a coupler capable of forming an azo dye by reaction with said diazonium compound, the improvement wherein said thermosensitive coloring layer comprises a petroleum resin.

4,454,522
MICROBRIDGE SUPERCONDUCTING DEVICE HAVING SUPPORT WITH STEPPED PARALLEL SURFACES

Alejandro L. de Lozanne, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Nov. 5, 1981, Ser. No. 318,451
Int. Cl.³ H01L 27/12, 39/22, 29/06
U.S. Cl. 357—5 8 Claims

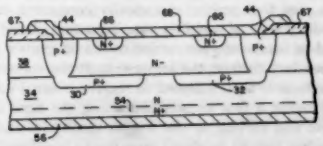


1. A microbridge superconductive device comprising an electrically insulating support having first and second generally parallel surfaces which are separated by a generally perpendicular step, a first layer of superconductive material on said first surface and a second layer of superconductive material on said second surface, said step defining a gap between said layers of superconductive material, and a layer of non-superconductive material over said first and second layers of superconductive material and in said gap, said non-superconductive material in said gap defining a junction between said layers of superconductive material.

4,454,523
HIGH VOLTAGE FIELD EFFECT TRANSISTOR

Lorimer K. Hill, Cupertino, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Filed Mar. 30, 1981, Ser. No. 248,814
Int. Cl.³ H01L 29/48, 29/06, 29/80
U.S. Cl. 357—15 1 Claim



1. A high voltage field effect transistor comprising:

a semiconductor body of a first conductivity type and and having first and second major parallel surfaces,

a drain region of said first conductivity type in said first major surface,

a source region of said first conductivity type in said second major surface,

a first gate region of opposite conductivity type in said second major surface and surrounded by said source region, said first gate region comprising a Schottky barrier region,

a second gate region of said opposite conductivity type in said second major surface and surrounding said source region, said second gate region extending into said semiconductor body between said source region and said drain region and thereby defining a current path between said source and drain regions which lies between said second gate region and said first gate region,

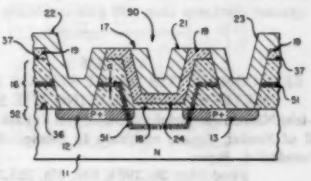
a first contact to said drain region, and

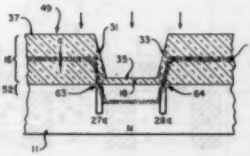
a second contact to said source region and to said first and second gate regions.

4,454,524
DEVICE HAVING IMPLANTATION FOR CONTROLLING GATE PARASITIC ACTION

Wendell Spence, San Jose, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 6, 1978, Ser. No. 884,060
Int. Cl.³ H01L 29/78
U.S. Cl. 357—23 9 Claims





1. A semiconductor memory device, comprising:

a semiconductor substrate of a predetermined conductivity type and having a channel region;

a gate structure overlying the channel region and defining channel region length and including a first, charge tunneling portion;

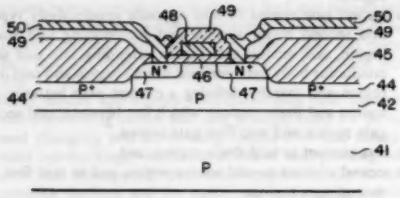
an insulating layer on the substrate and having an outer surface defining a well, the well having a base which defines the first, charge tunneling portion in the insulating layer and having walls extending from and sloping away from the base along the length of the channel region; and

an impurity layer of the predetermined conductivity type underlying and approximately paralleling the walls of the well such that the layer forms a substrate surface adjacent concentration of impurities beneath the walls of the insulating layer for controlling parasitic inversion of the underlying substrate.

4,454,525
IGFET HAVING CRYSTAL ORIENTATION NEAR (944) TO MINIMIZE WHITE RIBBON

Kunihiko Wada, and Motoo Nakano, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 12, 1980, Ser. No. 215,822
Claims priority, application Japan, Dec. 28, 1979, 54-170983
Int. Cl.³ H01L 29/78
U.S. Cl. 357—23 8 Claims

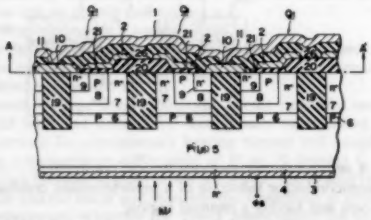


1. An insulated gate field effect transistor comprising:
a single crystal silicon substrate having a surface deviated by an angle within a range of 31° to 34° from the {100} crystallographic surface toward the {111} crystallographic surface,
a gate insulating film less than 1000 Å in thickness on said surface of said substrate,
a gate electrode on said gate insulating film for providing an electric field to said substrate across said gate insulating film, and
a thermally oxidized film selectively formed on and embedded in said substrate, said thermally oxidized film having a greater thickness than said gate insulating film.

4,454,526
SEMICONDUCTOR IMAGE SENSOR AND THE METHOD OF OPERATING THE SAME

Jun-ichi Nishizawa; Tadahiro Ohmi, and Takashige Tamamushi, all of Sendai, Japan, assignors to Semiconductor Research Foundation, Japan

Filed May 20, 1981, Ser. No. 265,383
Claims priority, application Japan, May 24, 1980, 55-69257
Int. Cl.³ H01L 27/14, 29/80, 29/78
U.S. Cl. 357—30 20 Claims

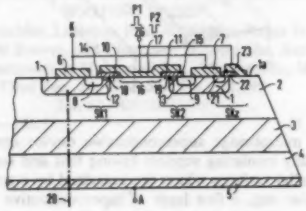


1. A semiconductor image sensor provided with a plurality of cells, each comprising a radiant energy input information detecting hook structure composed of a conductive first region for receiving a radiant energy, a high resistivity second region, a third region of a first conductivity type and having an impurity concentration in the range of 10^{15} to 10^{18} cm^{-3}, a low resistivity fourth region of a second conductivity type reverse from the first conductivity type, at least one electrode which is transparent to the radiant energy formed on said first region, and voltage applying means for directing one of photo carriers generated in pairs by the radiant energy in the first and second regions to the third region through the second region by applying to said transparent electrode a positive voltage with respect to said third region during a radiant energy period only, the first to fourth regions being sequentially formed on a semiconductor substrate from a main surface thereof toward the inside thereof;
a readout transistor using the fourth region of the hook structure as one of its main electrodes; and
refresh means for extinguishing excess majority carriers stored non-destructively in the third region of the hook structure;
the refresh means being voltage applying means for flowing out the excess majority carriers stored non-destructively in the third region into the first region through the second region by applying to said transparent electrode one of a negative and zero voltage with respect to said third region during a refresh period.

4,454,527
THYRISTOR HAVING CONTROLLABLE EMITTER SHORT CIRCUITS AND A METHOD FOR ITS OPERATION

Hubert Patalong, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,356
Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018468
Int. Cl.³ H01L 29/74, 29/78
U.S. Cl. 357—38 10 Claims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4,454,528

LOW RESISTANCE BACKSIDE PREPARATION FOR SEMICONDUCTOR INTEGRATED CIRCUIT CHIPS

Richard K. Trueblood, San Jose, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 278,829, Jun. 29, 1981, abandoned, which is a division of Ser. No. 959,344, Nov. 9, 1978, Pat. No. 4,293,587. This application Jan. 24, 1983, Ser. No. 460,556
Int. Cl.³ H01L 21/285
U.S. Cl. 357—40 2 Claims

1. A semiconductor integrated circuit chip capable of conductive attachment to a receiving surface comprising:

a silicon chip body having at least one surface free of silicon dioxide,

an alloy of aluminum and gold on said silicon dioxide free surface, and

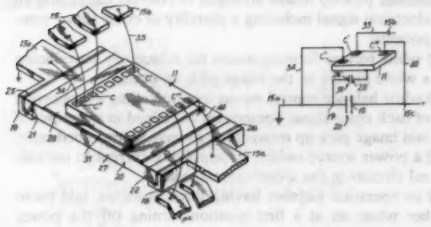
a gradient of gold with traces of aluminum extending into the silicon chip body adjacent to said silicon dioxide free surface.

4,454,529

INTEGRATED CIRCUIT DEVICE HAVING INTERNAL DAMPENING FOR A PLURALITY OF POWER SUPPLIES

Elliott Philofsky, Myrtle Beach, S.C.; Ward Parkinson, and Dennis Wilson, both of Boise, Id., assignors to AVX Corporation, Great Neck, N.Y.

Continuation-in-part of Ser. No. 224,127, Jan. 12, 1981. This application Jan. 15, 1982, Ser. No. 339,490
Int. Cl.³ H01L 23/16, 27/02, 23/48, 23/28
U.S. Cl. 357—75 5 Claims



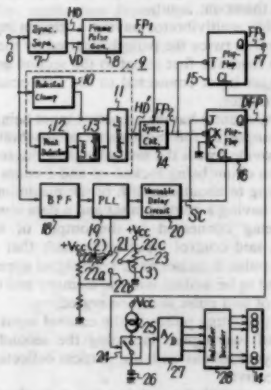
1. In an integrated circuit device comprising in combination a mass of polymeric insulating material, a lattice work of metal formed from an integral web embedded in said mass, said lattice work including a plurality of conductor members having portions disposed in coplanar alignment within said mass, said conductor members including contact portions extending outwardly of said mass, the improvement comprising a pair of said conductor members within said mass having spaced inner terminal ends defining a support platform including a pair of spaced mounting portions displaced from the plane of said coplanar portions of said conductor members (portions), said pair of conductor members and the associated mounting portions being adapted to be connected across a first power supply, an additional one of said conductor members and one of said pair of conductor members being adapted to be connected across a second power supply, a capacitor having a pair of electrode terminations supported respectively on said spaced mounting portions and in electrical contact therewith, said capacitor having a generally planar upper surface layer portion formed of dielectric material, the uppermost surface of said layer defining an exposed face, said exposed face of said layer defining a mounting area, said capacitor including an internal upper electrode in parallel spaced relation to said mounting area and connected to one of said electrode terminations whereby it is electrically connected to the associated mounting portion, a conductive layer member on said exposed face in registry with at least a part of said upper electrode, an IC chip of semi-conductive material mounted over said conductive layer, said chip including a first and second pair of power supply inputs, a first pair of circuit conductor means respectively electrically connecting each of said first pair of power supply inputs with a respective one of said pair of conductor members, whereby said capacitor is shunted across said first power supply, another circuit conductor means electrically connecting said additional one of said conductor members with one of said second pair of power supply inputs of said IC chip, whereby there is formed in shunting relation of said second power supply and said second pair of power supply inputs a capacitive load defined by said upper electrode, said surface layer of said capacitor and said conductive layer member.

4,454,530

COLOR FRAMING SIGNAL GENERATOR

Tadaaki Yoshinaka, Hadano, and Kanji Yamashita, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 250,074
Claims priority, application Japan, Apr. 11, 1980, 55-48481
Int. Cl.³ H04N 9/62, 9/535
U.S. Cl. 358—10 11 Claims



1. A color framing pulse generator comprising:

(A) a burst lock oscillator means for continuously generating a color subcarrier signal in association with a color burst signal derived from an incoming color video signal;

(B) a framing pulse generator means for generating framing pulses in association with horizontal and vertical sync pulses derived from said incoming color video signal;

(C) a phase relationship detecting means for detecting a phase relationship between said color subcarrier signal and said framing pulses;

(D) a frequency divider means for dividing said framing pulses, said frequency divider means being cleared by an output signal of said phase relationship detecting means; and

(E) an indicator means being supplied said output signal of said phase relationship detecting means for indicating said phase relationship between said color subcarrier signal and said framing pulses.

4,454,531

DIGITAL CIRCUIT FOR PROVIDING A BINARY SIGNAL ON THE OCCURRENCE OF A PREDETERMINED FREQUENCY RATIO OF TWO SIGNALS

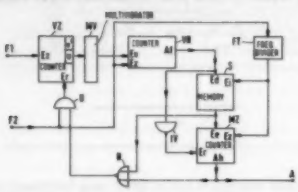
Herbert Elmis, Denzlingen, and Adrian Klar, Freiburg, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,556

Claims priority, application European Pat. Off., Mar. 9, 1981, 81101720.1

Int. Cl.³ H04N 9/44

U.S. Cl. 358—17 5 Claims



1. A digital circuit for providing a binary signal on the occurrence of a predetermined frequency ratio between the frequencies of a first and a second signal during a suitable measuring period, comprising:

an up-counter having a capacity greater than the predetermined frequency ratio, said up-counter having a count input, an output for a first count that is slightly lower than a second count corresponding to the predetermined frequency ratio, the higher frequency first signal being applied to the count input;

a monostable multivibrator having a trigger input, a dwell time equal to twice the period required by the up-counter to count from the first count to the second count output, said trigger input connected to the first count output of the up-counter;

an up-down counter having a control input being connected to the output of the monostable multivibrator, a count input provided with the second signal, the zero state and maximum count being locked up and a count output corresponding to about one-fifth of the maximum count;

a memory having a control input and a data input, said data input being connected to the output of the updown counter, said control input being such that when it recrives a pulse, it causes an L level signal appearing at the data input to be written into the memory and to be read at the end of said pulse and then erased;

means for providing pulses to the control input in response to one of two signals including the second signal and signals synchronous with the vertical deflection of a television receiver;

a measuring period determining counter whose maximum count is locked up having a count input, an enable input, a maximum count output and a reset input, the count input being connected to the output of the means for providing pulses, the enable input being connected to the output of the memory, the maximum count output providing the output of the digital circuit;

inverter means for receiving the count output of the updown counter and for providing a signal inversely corresponding thereto, said signal being provided to the reset input of the measuring period determining counter;

a NOR gate having a first input connected to the output of said memory and a second input connected to the output of the digital circuit and an output; and

an AND gate having a first input connected to the output of the NOR gate and a second input receiving the second signal and having an output connected to the reset input of the up-counter.

3. A digital circuit as described in claim 1 or 2 for use in a color television receiver to sense the fixed ratio between chrominance-subcarrier frequency and horizontal frequency in the received signal wherein the first signal is the chrominance-subcarrier frequency and the second signal is the horizontal frequency.

4,454,532

WHITE BALANCE CONTROL FOR COLOR VIDEO CAMERA

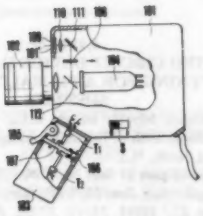
Takashi Itani; Susumu Kozuki, and Takashi Narasawa, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,664

Claims priority, application Japan, Sep. 10, 1980, 55-125505; Nov. 21, 1980, 55-165176

Int. Cl.³ H04N 5/35

U.S. Cl. 358—29 12 Claims



1. A color video camera, comprising:

(a) image pick-up means arranged to convert image into an electrical signal including a plurality of color signal components;

(b) white picture forming means for selectively introducing a white picture to the image pick-up means;

(c) white balance control means for controlling a proportion of each color signal component contained in an output of said image pick-up means so as to have a prescribed ratio;

(d) a power source switch for supplying current to individual circuits in the video camera; and

(e) an operation member having three positions, said member when set at a first position turning off the power source switch, when set at a second position, turning on the switch controlling the white picture forming means to introduce the white picture to the image pick-up means, and actuating the white balance control means, and when set at a third position said member maintaining the turning on of the power source switch and controlling the white picture forming means so as to terminate introduction of the white picture to the image pick-up means, wherein said second position is between the first and third positions.

4,454,533

VERTICAL DETAIL CORING CIRCUIT TO TRACK A GAIN ADJUSTED SIGNAL

William A. Lagoni, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1981, Ser. No. 323,059

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 14 Claims

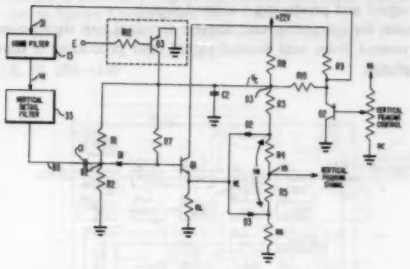
1. A circuit for processing certain signals comprising:

first means for translating said certain signals with a variable gain in response to a gain control signal;

second means coupled to said first means for coring the signals provided by said first means; and

third means coupled to said first and to said second means

for providing said gain control signal for controlling the amplitude of said certain signals and for controlling the



threshold level of the coring performed in said second means.

4,454,534

METHOD AND APPARATUS FOR FILTERING THE LUMINANCE SIGNAL FROM ACCVS TELEVISION SIGNAL

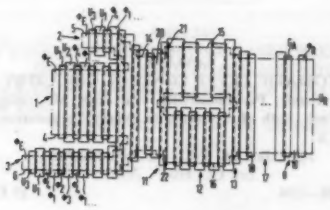
Rainer Läder, Oberhaching, and Wolfgang Haussmann, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengeselischaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,924

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1981, 3104456

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—31 **2 Claims**



1. Method for filtering the luminance signal from a CCVS television signal, which comprises sampling the CCVS signal in a CTD filter with twice the color carrier frequency, converting the CCVS signal into a charge packet proportional to its voltage, dividing the charge packet into first and second charge parts in a ratio of 1:1, conducting the first and second charge parts through separate branches, delaying the first charge part relative to the second charge part by one given sampling period in the branches, and subsequently recombining the charge parts in an output channel.

4,454,535

COLOR PICTURE PROJECTION SYSTEM

Toyotaka Machida, Kashiwa, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 13, 1981, Ser. No. 292,533

Claims priority, application Japan, Aug. 15, 1980, 55-112323

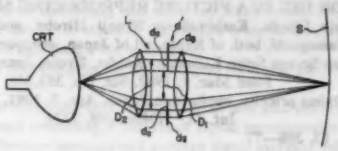
Int. Cl.³ H04N *9/31*

U.S. Cl. 358—60 **8 Claims**

1. A color picture projecting system comprising:

(a) a color picture light source for emitting three primary color light rays;

(b) a lens system for magnifying the picture from said color picture light source so that said picture is projected on a screen, said lens system having chromatic aberration and being designed so that a green image of the picture is sharply focued on said screen and red and blue images of the picture are not sharply focused on said screen particularly the areas of the picture incident on portions of the lens system remote from the center thereof; and



(c) an optical filter for blocking the red and blue light rays from said color picture light source so that said red and blue light rays are transmitted to the screen only through the center portion of said lens system and filter, while the green light rays are transmitted to the screen by substantially the entire area of said lens system and filter.

4,454,536

METHOD AND APPARATUS FOR CORRECTING VIDEO SIGNALS IN COLOR PRINTING SIMULATION

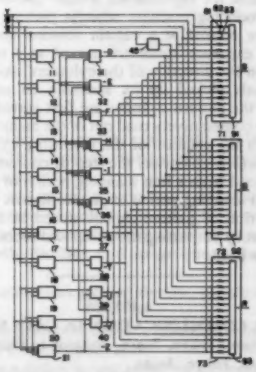
Kisaburo Shimura, Uraws; Tetsuji Utsuda, Koshigaya; Hironobu Suda, Ohimachi, and Koji Kobayashi, Higashiyamato, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Apr. 5, 1982, Ser. No. 365,643

Claims priority, application Japan, Apr. 7, 1981, 56-52221; Sep. 24, 1981, 56-150876

Int. Cl.³ G03F *3/08*

U.S. Cl. 358—76 **8 Claims**



7. An apparatus for obtaining signals (B), (G) and (R) for blue, green and red, respectively, for forming an image on a color monitor which image resembles a printed image formed from signals (Y), (M), (C) and (K) for yellow Y, magneta M, cyan C and black K, respectively, said apparatus comprising:

detectors for detecting mixed-color signals of secondary colors, a tertiary color, black x primary colors, black x secondary colors and a quaternary color;

an overlap compensation circuit for performing overlap compensation of the mixed-color signals; and

a correction/conversion circuit which calculates the signals (B), (G) and (R) from the signals (Y), (M), (C) and (K) and the overlap-compensated mixed-color signals;

said correction/conversion circuit multiplying the signals (Y), (M), (C) and (K) and the overlap-compensated mixed-

color signals by correction factors, and adding and subtracting the obtained signals, thereby converting the signals (Y), (M), (C) and (K) into the signals (B), (G) and (R).

4,454,537

METHOD FOR REPRODUCING A COLOR PICTURE FOR USE IN A PICTURE REPRODUCING MACHINE

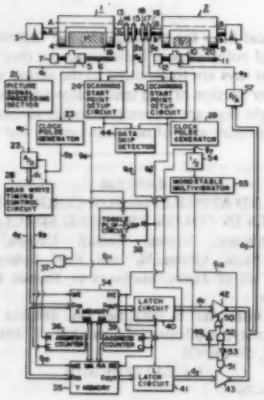
Fumio Okada, Kashiwabara; Shunji Hirobe, and Masayuki Yamaguchi, both of Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 1, 1982, Ser. No. 353,248

Claims priority, application Japan, Apr. 7, 1981, 56-51248

Int. Cl.³ H04N *1/46, 1/26*

U.S. Cl. 358—77 **6 Claims**



1. A method for reproducing a color picture for use in a picture reproducing machine wherein picture and recording cylinders are rotated at a certain rotation speed ratio, and pickup and exposure heads are moved at a certain moving speed ratio in the direction of the cylinders' axis, and wherein picture signals picked up by scanning an original picture mounted to the picture cylinder are first stored in a memory and then are consecutively read out of the memory in synchronization with the rotation of the recording cylinder, the improvement which comprises the step of composing recording signals obtained from a first scanning period of picture signals and a second scanning period of picture signals when said first scanning period of picture signals stored in the memory is skipped, thereby outputting the composed recording signals to the exposure head.

4,454,538

DATA COMMUNICATION IN CATV SYSTEM

Hiroshi Toriumi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,431

Claims priority, application Japan, Jul. 24, 1981, 56-116859

Int. Cl.³ H04N *7/10*

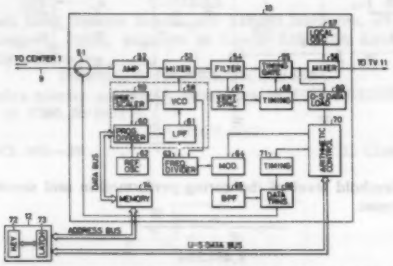
U.S. Cl. 358—86 **10 Claims**

1. In a CATV system in which a central facility is connected through a plurality of cables to a number of terminal units such a manner that two-way communication can be effected between said central facility and said terminal units, wherein an input signal at a first frequency sent from said facility and said terminal units comprises a video signal component and a discrete terminal unit signal component, said first frequency of said input signal corresponding to a first program channel, and an output signal at a second frequency sent from said terminal units to said facility comprises a discrete terminal unit output signal, said terminal units comprising:

means for producing a first signal substantially equal in frequency to said first frequency of said input signal corresponding to said first program channel;

mixing means for mixing said first signal with said input signal and producing a second signal;

means for extracting said discrete terminal unit signal component from said second signal, and producing a third signal;



means for receiving said third signal and producing said output signal; and

means for transmitting said output signal to said facility, said second frequency of said output signal being substantially a preset fraction of said first frequency of said input signal corresponding to said first program channel.

4,454,539

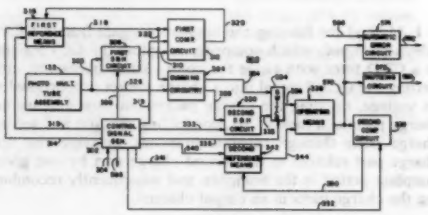
AUTOMATIC LEVEL CONTROL CIRCUITRY

George A. Fedde, Perkiomenville, and Juan M. Gottschalk, Elkins Park, both of, assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 26, 1982, Ser. No. 342,980

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—106 **19 Claims**



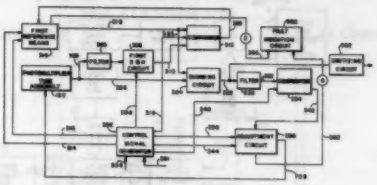
1. In a scanning apparatus which periodically sweeps a beam of light across a printed circuit board along a plurality of sweep paths, and said scanning apparatus including detector means responsive to radiation from the printed circuit board as it is swept by said beam of light for producing first and second signals indicative of whether a conductor portion or a substrate portion of said printed circuit board is being swept, the improvement comprising:

automatic level control means responsive to said first and second signals for providing level adjusted first and second output signals, the levels of said level adjusted second output signals being substantially the same for all printed circuit boards swept in said scanning apparatus.

4,454,540
AUTOMATIC LEVEL CONTROL CIRCUIT

Kenneth H. Kirk, Harleysville; George A. Fedde, Perkiomenville, and Juan M. Gottschalk, Elkins Park, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 26, 1982, Ser. No. 342,981
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 17 Claims



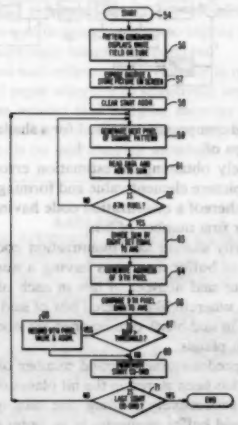
1. In a scanning apparatus which periodically sweeps a beam of light across a printed circuit board along a plurality of sweep paths, said scanning apparatus including detector means, responsive to radiation from the printed circuit board as it is swept by said beam of light and to an adjustment signal, for producing first and second signals indicative of whether a conductor portion or a substrate portion of said printed circuit board is being swept, the improvement comprising:

automatic level control means responsive to said first and second signals for providing level adjusted first and second output signals, the levels of which form a ratio, R, which is substantially the same for all printed circuit boards swept in said scanning apparatus, said automatic level control means including adjustment means coupled to said detector means for providing said adjustment signal.

4,454,541
CHARGE COUPLED DEVICE BASED BLEMISH DETECTION SYSTEM AND METHOD

Robert A. Duschl, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,038
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 7 Claims



1. A system for detecting blemishes on an illuminated object comprising:

a digital storage device;

a charge coupled device (CCD);

output circuitry for transferring data from said CCD to said digital storage device, whereby the data from each pixel of said CCD is stored at a specific address within said digital storage device;

means for averaging the signals from the adjacent pixels surrounding a particular pixel and providing an average signal;

address generator means for providing the address of the square area containing said adjacent pixels to said digital storage device to transfer the signals from said adjacent pixels to said means for averaging;

means for receiving the particular signal from said particular pixel;

means for receiving said average signal and said particular signal and providing a difference signal representative of the difference between said average signal and said particular signal;

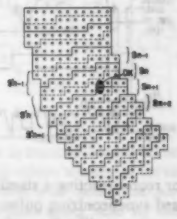
means for providing a threshold signal representative of the permissible maximum of said difference signal; and

comparator means for receiving said difference signal and said threshold signal and providing a blemish signal when said difference signal exceeds said threshold signal.

4,454,542
DEFECT DETECTING METHOD AND APPARATUS

Takashi Miyazawa, Urayasu, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,180
Claims priority, application Japan, Jul. 30, 1981, 56-118607
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 11 Claims



1. A defect detecting method comprising the steps of:

(a) receiving light from an object under inspection, to form an image thereof;

(b) dividing said image into a plurality of picture elements;

(c) storing signals of said picture elements in relation to the positions of the corresponding segments of said image;

(d) imaginarily dividing said image into a plurality of regions;

(e) accumulating said picture element signals for each region;

(f) comparing the results of said accumulations of the regions proximate to each other; and

(g) detecting a defect in said object in accordance with the result of said comparison.

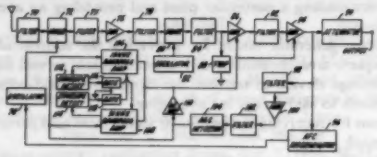
4,454,543
DYNAMIC VIDEO SCRAMBLING

John A. Lund, McHenry Shores; David L. Richardson, Arlington Heights, both of Ill., and Graham S. Stubbs, Poway, Calif., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Nov. 6, 1981, Ser. No. 318,756
Int. Cl.³ H04N 7/16
U.S. Cl. 358—118 4 Claims

1. Means for descrambling a video signal scrambled by the application of one of a plurality of available scrambling signals and whereby the scrambling signals are changed in accordance with changes in the brightness level of the video signal, includ-

ing plural means for detecting, only from the scrambling applied to the video signal, which of the plurality of available scrambling signals is currently being used, said plural detecting means, each including a detector responsive to a scrambling



signal different from any other available scrambling signals, and means connected to and responsive to said plurality of detectors for effecting a descrambling mode to descramble the video signal scrambled by the application of the detected scrambling signal.

4,454,544

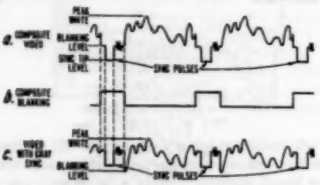
TV PRIVACY SYSTEM USING GRAY SYNC

Liston Abbott, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 112,174, Jan. 15, 1980, abandoned. This application Dec. 9, 1981, Ser. No. 328,834

Int. Cl.³ H04N 7/16

U.S. Cl. 358—120 **10 Claims**



1. A decoder for reconstructing a standard composite video signal with standard synchronizing pulses from a video signal V with only gray sync encoding E_{GS}, of a repetition rate f_{GS}, and comprising:

first generating means for generating a signal E_{VCO} having a controllable frequency f_{VCO} which, in the absence of frequency control, is slightly different from rate f_{GS};

second generating means responsive to E_{VCO} for generating a composite blanking signal E_B having a repetition rate equal to f_{VCO} so that E_B will slew with respect to E_{GS} until E_B and E_{GS} become synchronized;

summing means for summing E_B and video signal V with gray sync encoding E_{GS} to produce a reconstructed standard composite video signal when E_B and E_{GS} become synchronized; and

phase lock means for phase locking E_{VCO} with the standard synchronizing pulses of said reconstructed video signal to maintain E_B and E_{GS} in a synchronized relationship.

4,454,545

CHARGE COUPLED DEVICE BASED INSPECTION SYSTEM AND METHOD

Robert A. Duschl, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,143

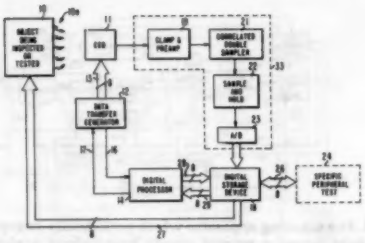
Int. Cl.³ H04N 3/15

U.S. Cl. 358—213 **11 Claims**

1. In an inspection system including a charge coupled device (CCD) having pixels arranged in horizontal rows and vertical columns and a storage device for storing digital information transferred from said CCD; an improvement for transferring data from said CCD to said storage device comprising:

memory means for storing the number of horizontal rows of pixels and the number of vertical columns of pixels of said CCD;

first means for selectively setting said number of rows of pixels into said memory means;



second means for selectively setting said number of columns of pixels into said memory means; and

waveform generator means responsive to said memory means for transferring data from said CCD to said storage device in accordance with the numbers of rows and columns set in said memory means whereby different sizes of CCDs can be used in said system by changing the settings on said first and second means for setting.

4,454,546

BAND COMPRESSION DEVICE FOR SHADED IMAGE

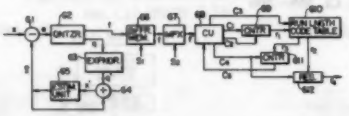
Sumio Mori, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 10, 1981, Ser. No. 242,209

Claims priority, application Japan, Mar. 13, 1980, 55-32082

Int. Cl.³ H04N 7/13, 1/00

U.S. Cl. 358—260 **6 Claims**



6. A band compression method for a shaded image, comprising the steps of:

repetitively obtaining an estimation error from a sampled input picture element value and forming from a estimation value thereof a quantization code having a predetermined integer first number of bits;

temporarily storing said quantization codes in at least one block of buffer memories having a number of bit planes equal to said number of bits in each of said quantization codes, wherein like-ordered bits of said quantization code stored in said block of memories are stored in same ones of said bit planes;

when a predetermined second number of said quantization codes has been stored in the bit planes of said buffer memories, successively reading out said quantization codes from said buffer memories in an order of said bit planes;

converting data of each of said bit planes into run-length codes;

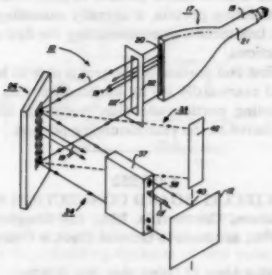
transmitting said run-length codes to a receiving station; and

converting received run-length codes to a visual image at said receiving station.

4,454,547
RASTER OUTPUT SCANNER HAVING A FULL WIDTH ELECTRO-MECHANICAL MODULATOR

Kwok L. Yip, Webster, N.Y.; To R. Hsing, Sudbury, Mass.; Joseph J. Daniele, Pittsford, and Joachim A. Ritter, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1982, Ser. No. 394,603
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—293 **12 Claims**



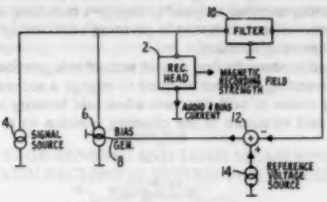
1. An image output scanner comprising in combination:
(a) a source of high intensity radiation;
(b) means for converting radiation from said radiation source to a plurality of individual radiation beams;
(c) an array of flexible reflectors, the number of said reflectors being at least equal to the number of said radiation beams,
said reflector array being disposed in the path of said radiation beams so that individual ones of said radiation beams impinge against individual ones of said reflectors whereby said reflectors individually reflect said radiation beams along a first path when said reflectors are undeflected and along a second path when said reflectors are deflected;
(d) an imaging member on which images are created through selective exposure by said radiation beams;
(e) a lens array for transmitting individual radiation beams reflected by said reflectors along one of said first and second paths to said imaging member to expose said imaging member and create images thereon; and
(f) means to deflect said reflectors individually in response to an image signal input whereby to selectively impinge said radiation beams against said imaging member to expose said imaging member and create images represented by said image signals on said imaging member.

4,454,548
BIAS CONTROL METHOD AND APPARATUS FOR MAGNETIC RECORDING

Joergen S. Jensen, Hjerm, Denmark, assignor to Bang and Olufsen A/S, Struer, Denmark

Continuation-in-part of Ser. No. 293,150, Aug. 17, 1981. This application Nov. 6, 1981, Ser. No. 318,868
Claims priority, application Denmark, Aug. 20, 1981, 3686/81
Int. Cl.³ G11B *5/45, 15/02*
U.S. Cl. 360—66 **7 Claims**

1. Apparatus for recording an input signal on a magnetic medium comprising:
record head means for recording on the magnetic medium,
variable amplitude AC bias signal generator means,
means for applying the input signal and bias signal to said record head means, and
feedback circuit means for controlling the bias generator means, measuring the total active bias signal resulting from the sum of the applied variable bias signal and the high frequency portion of the input signal applied to the

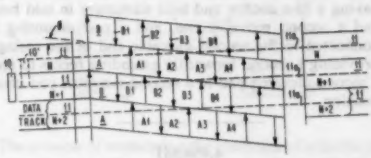


recording and having its output applied to control the bias generator.

4,454,549
SLANT TRACK SECTOR SERVO

Dale H. Pennington, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,836
Int. Cl.³ G11B *5/58*
U.S. Cl. 360—77 **4 Claims**



1. A system for use in track following servo operations on a rotating magnetic disk where sectors of servo information are interspersed on said disk with data track portions, said servo information and said data being read by the same magnetic head, said servo sectors containing alternate first and second servo tracks having magnetic transitions which are spaced from each other in adjacent tracks,
said servo tracks being recorded on said disk at a slant with respect to said data tracks,
the centerline of each of said servo tracks corresponding to the centerline of one of said data tracks at the beginning of each servo sector,
the centerline of each of said slanted servo tracks corresponding to the centerline of a different one of said data tracks at the end of each servo sector,
first detector means for detecting signals read by said head as it passes across said servo sector, and
digital means for measuring time relationships between signals from said first and second servo tracks during the rotation of said servo sector past said head to provide a measure of the amount and direction of the displacement of said head from said data track centerline.

4,454,550
CLEANING CARTRIDGE ASSEMBLY FOR A CASSETTE CLEANER

Elvind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.

Filed Jan. 7, 1982, Ser. No. 337,768
Int. Cl.³ G11B *5/10, 5/41*; A47K *7/02*; A47L *1/06*
U.S. Cl. 360—137 **7 Claims**

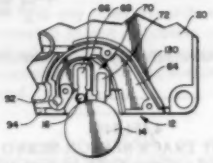
1. A cleaning assembly adapted to be removably mounted in a cleaning position in a structure of a cleaning apparatus so as

to be positioned to clean a capstan and pinch roller of a player and/or recording unit, said assembly comprising:

(a) a housing having a forward portion, a rear portion, a first side portion and a second side portion,

(b) said housing having at said first side portion a first connecting member adapted to engage a matching connecting means of said structure in pivoting relationship at a pivot connecting location,

(c) said housing having at said second side portion a second connecting member adapted to engage a second connecting means of said structure when said housing is mounted in said structure in the cleaning position so as to inhibit



rotation of the housing about the pivot connecting location,

(d) a first pad mounting member fixedly mounted in said housing and defining a first forwardly extending recess to receive a first cleaning pad in a first pad cleaning position,

(e) a second pad mounting member comprising a spring arm having a first anchor end held stationary in said housing and a second movable end, and a pad mounting head connected to the second movable end of the spring and providing a second forwardly extending recess to receive a second cleaning pad in a second movable pad cleaning position.

4,454,551

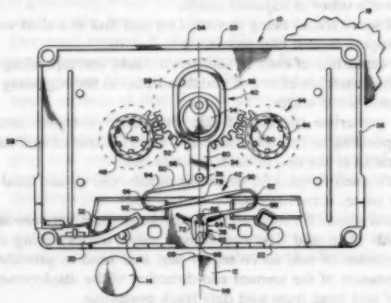
CLEANING APPARATUS FOR A CASSETTE PLAYER

Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.

Filed Jan. 7, 1982, Ser. No. 337,945

Int. Cl.³ G11B *5/10, 5/41;* **A47K** *7/02, 1/06*

U.S. Cl. 360—137 **14 Claims**



1. A cleaning apparatus adapted to clean a head member of a player and/or recording unit, said apparatus comprising:

a. a housing adapted to be placed in said unit in a cleaning position, said housing having a forward end and a rearward end,

b. an arm member mounted in said housing and comprising a first forward end portion adapted to have a cleaning member mounted thereto, a longitudinal axis extending rearwardly from said first end portion, and a second mounting portion by which said arm is mounted to said housing for oscillating motion to cause said first end portion to move back and forth on a path generally transverse to said longitudinal axis,

c. said arm further comprising a third intermediate spring portion by which said first portion is connected to said second portion, said third portion comprising first and second relatively flexible elbow sections which are spaced laterally from one another relative to said longitudinal axis, said first elbow section being connected to the first forward end portion to permit said first elbow section to bend relative to said first end portion, said second elbow portion being connected to the rear mounting portion to permit said second elbow section to bend relative to said second mounting portion, a laterally extending relatively rigid first link section interconnecting the first and second elbow sections,

whereby the first end portion of the arm is able to be deflected forwardly and rearwardly on its longitudinal axis relative to the rear mounting portion and also to deflect laterally and rearwardly relative to the rear mounting portion.

4,454,552

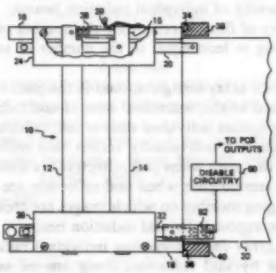
PRINTED CIRCUIT BOARD CONNECTION SYSTEM

Richard A. Barnes, Crownsville, Md., and Gregory J. Bartz, Palm Bay, Fla., assignors to General Electric Company, Syracuse, N.Y.

Filed May 17, 1982, Ser. No. 378,882

Int. Cl.³ H01R *13/64;* **H01H** *9/20*

U.S. Cl. 361—9 **6 Claims**



4. A printed circuit board handling and output disable system comprising:

manually operable circuit board insertion/extraction means including handle means for detachably engaging a printed circuit board during insertion and removal of the board;

output disable means disposed on the printed circuit board including switch means and an output disable circuit for disabling the board output upon actuation of said switch means; and

switch actuator means carried by said handle means in position to actuate said switch means to its "off" position when said handle means is in engagement with said circuit board and to "on" position when detached therefrom.

4,454,553

D.C. CURRENT DETECTOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Continuation of Ser. No. 182,699, Aug. 29, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,399

Int. Cl.³ H02H *7/08*

U.S. Cl. 361—31 **3 Claims**

1. A D.C. current detector, comprising:

a current-pulse duty conversion element including a core member of an amorphous magnetically soft material carrying first and second electrical coils disposed thereon,

said first electrical coil having an unknown current to be detected flowing therethrough;

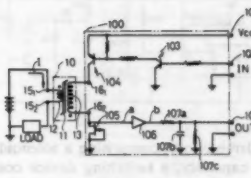
pulse supply circuit means for applying a pulse signal to a first terminal of said second electrical coil;

voltage conversion means connected to a second terminal of said second electrical coil for converting a current flowing through said second electrical coil into a corresponding voltage, said voltage conversion means consisting of a constant current source means connected to said second terminal for establishing a predetermined constant current value through said second electrical coil upon application of said pulse signal, wherein said constant current saturates said core member and produces a delayed voltage signal after a time delay related to the unknown current during the remaining duration of said pulse signal; and

integrating circuit means coupled to said voltage conversion means for converting said delayed voltage signal into an output voltage, the amplitude of said output voltage being related to the amplitude of said unknown current, comprising,

amplifier means connected to said second terminal of said second electrical coil for pulse shaping said delayed voltage signal, and

means for integrating the pulse shaped delayed voltage signal to produce said output voltage.



4,454,554

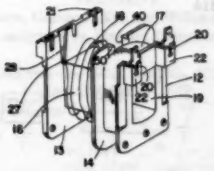
COIL BOBBIN

Howard R. Coleman, Elyria, Ohio, assignor to The General Industries Company, Elyria, Ohio

Continuation of Ser. No. 172,799, Jul. 28, 1980, abandoned. This application Aug. 2, 1982, Ser. No. 404,554

Int. Cl.³ H02H *7/04*

U.S. Cl. 361—41 **6 Claims**



1. An electromagnetic coil construction containing a bobbin having a primary winding and a secondary winding, comprising:

said bobbin having an axial hub, a first end flange at one end of the hub and a second end flange at the other end of the hub wherein both end flanges are disposed normal to the axis, and a separator flange integral with the hub and end flanges and disposed normal to the axis and intermediately spaced between said first and said second end flange, said separator flange having a through opening therein,

primary windings wound on the hub between said first end flange and said separator flange, and secondary windings wound on the hub between said second end flange and said separator flange;

a thermal sensing device electrically interconnected in series with said primary winding or a secondary winding and inserted into said opening in the separator flange in communication with said primary and secondary windings whereby said thermal sensing device is in physical contact with both said primary windings and said secondary windings whereby overheating in either the primary windings or the secondary windings or both windings activates said thermal sensing device to interrupt the circuit; and integral spacing means provided adjacent the periphery of said opening adapted to distort under overheating conditions.

4,454,555

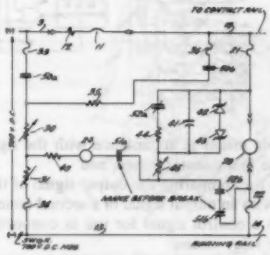
VOLTAGE SENSING AND LOAD MEASURING AUTOMATIC RECLOSING SYSTEM FOR D-C CIRCUIT BREAKERS

James P. DeLacy, Havertown, Pa., assignor to Brown Boveri Electric, Inc., Rolling Meadows, Ill.

Filed Sep. 9, 1982, Ser. No. 416,298

Int. Cl.³ H02H *11/00*

U.S. Cl. 361—59 **14 Claims**



1. The process of monitoring the condition of a feeder circuit and operating a d-c feeder breaker in the feeder circuit comprising the steps of:

monitoring the voltage in a voltage-measuring mode across said feeder circuit and closing said breaker if the feeder voltage is above a first value, or initiating a load-measuring mode if said feeder voltage is lower than a second value that is lower than said first value;

when in said load-measuring mode, connecting a Wheatstone bridge resistance measuring circuit to said feeder circuit, whereby the resistance of said feeder circuit defines one arm of the bridge and whereby the other three arms of said bridge have resistance values to permit a determination of the resistance of said feeder circuit;

maintaining said feeder breaker open when the feeder resistance circuit measured during said load-measuring mode is below a given value; and

closing said feeder breaker when said feeder circuit resistance measured during said load-measuring mode is above said given value.

4,454,556

TIMING CONTROLLER FOR A RECLOSER RELAY

Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, King of Prussia, Pa.

Filed Sep. 30, 1982, Ser. No. 429,719

Int. Cl.³ H02H *3/07*

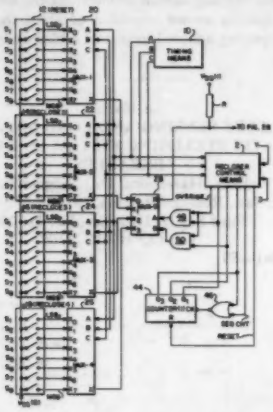
U.S. Cl. 361—73 **17 Claims**

1. For a recloser relay means, a controller means comprising:

(a) a plurality of selectable means for developing a plurality of signals representative of selected timing characteristics for operation of the recloser relay means;

(b) first counter means, operatively associated with the recloser relay means, for developing a signal responsive to the condition of the recloser relay means;

(c) sequential means, operatively associated with the plurality of selectable means and the first counter means, for accepting the signals developed by the plurality of selectable means and for developing an output signal selected from between the plurality of signals received from the



selectable means in accordance with the signal received from the first counter means; and

(d) means for comparing the output signal of the sequential means with an output signal of a second counter means to develop a control signal for use in connection with the recloser relay means.

4,454,557

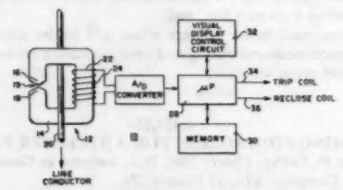
NON-LINEAR ALTERNATING CURRENT TRANSDUCER

James R. Hurley, Brookfield, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Apr. 15, 1982, Ser. No. 368,835

Int. Cl.³ G01J *19/00*; H02H *3/00*

U.S. Cl. 361—93 **15 Claims**



1. A current transformer core comprising:

a yoke for receiving primary and secondary windings, said yoke being formed from a high permeability ferromagnetic material and having a cross sectional area sufficiently large that over its entire operating range the yoke does not become saturated, and having a graded air gap, and said air gap being configured to provide a non-linear magnetic circuit response for changes in current through said primary winding.

4,454,558

SOLENOID DRIVE CIRCUIT

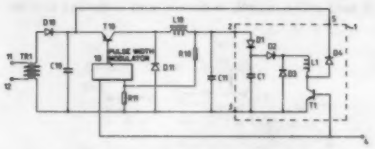
David Huddart, Malmesbury, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,169

Claims priority, application United Kingdom, Jul. 31, 1981, 8123482

Int. Cl.³ H01H *47/22*

U.S. Cl. 361—153 **8 Claims**



1. A solenoid drive circuit comprising a solenoid, first and second diodes, a capacitor, a switching device connected in series arrangement with the solenoid, input means for applying an operate signal to the switching device which determines an operation period for the drive circuit, means connecting the first diode, the solenoid and the switching device in a first series circuit which is connected in parallel with the capacitor, means connecting the second diode in parallel with the series arrangement of the solenoid and the switching device, said capacitor and solenoid together forming a resonant circuit having a resonant period whereby the capacitor will be resonantly discharged through the solenoid under control of said operate signal, and wherein the first and second diodes are operative to cause electric charge to be transferred from the capacitor to the solenoid only during the first quarter cycle of the resonant period of the resonant circuit and being operative to allow current to circulate in a loop formed by the solenoid, the switching device and the second diode thereby to hold the solenoid operated for the remainder of the operation period of the operate signal.

4,454,559

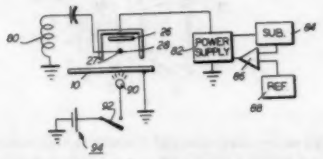
CONTROL FOR A CORONA DISCHARGE DEVICE

Vittal U. Shenoy, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1982, Ser. No. 412,683

Int. Cl.³ G03G *15/00*

U.S. Cl. 361—214 **6 Claims**



1. A corona device for depositing a uniform charge on a photoconductive surface comprising:

a coronode member;

a conductive shield member;

means including a constant photoreceptor current power supply for supplying power to one of said members;

means for intermittently illuminating said photoconductive surface;

means for generating an electrical signal representing the difference in the voltage on said one of said members for an illuminated photoconductor condition and a non-illuminated condition; and

means for comparing said difference to a reference voltage

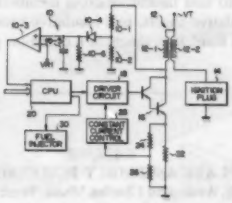
to derive an output for modify the voltage applied to said one of said members.

4,454,560

IGNITION DETECTOR CIRCUIT

Satoshi Nakao, Tokyo, and Yasuo Taguchi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 9, 1981, Ser. No. 319,410
Claims priority, application Japan, Nov. 18, 1980, 55-162353
Int. Cl.³ F23Q 3/00; B62D 45/00
U.S. Cl. 361—257 12 Claims



1. An ignition detector circuit comprising:

voltage detecting means for detecting a voltage at a primary winding of an ignition coil and generating an output voltage according to the voltage detected;

capacitive means charged according to the output voltage from said voltage detecting means, said capacitive means storing a voltage which becomes higher than a predetermined voltage only when a voltage impulse is generated at the primary winding immediately after a constant coil current through the primary winding is rapidly interrupted;

discharging means for causing said capacitive means to be discharged; and

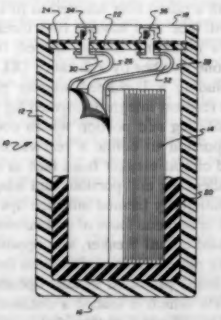
a comparator circuit for comparing the voltage charged on said capacitive means with said predetermined voltage to generate an output signal according to the result of the comparison.

4,454,561

ELECTRICAL COMPONENT HAVING A RESISTANCE ELEMENT

Godfrey R. Pearce, Glasgow, Ky., and William J. Evans, Indianapolis, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jul. 26, 1982, Ser. No. 402,153
Int. Cl.³ H01G 1/11
U.S. Cl. 361—275 6 Claims



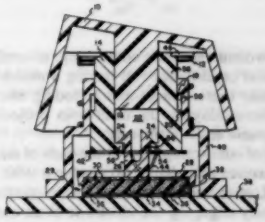
1. In an elecrical component of the type including a housing, a component element located within said housing, and at least a pair of electrical connector means coupled to said component element and electrically accessible from outside of said housing, wherein the improvement comprises a resistive element including a mixture of carbon black and an ethylene propylene copolymer integral with said housing and electrically contacting both of said connector means, said resistive element including a predetermined, finite electrical resistance means including the material composition of said resistive element for forming an electrical path of known resistance between said connector means.

4,454,562

KEYSWITCH WITH TELESCOPING PLUNGER

Robert D. Bush, Coeur d'Alene, Id., and Dean S. Cowles, Spokane, Wash., assignors to General Instrument Corporation, New York, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,674
Int. Cl.³ H01G 5/16; H01H 3/12
U.S. Cl. 361—288 11 Claims



1. An actuator assembly for a low profile keyswitch comprising:

a housing;

an outer plunger;

a channel in said housing through which said outer plunger can slide from a first position to a second position;

means for spring loading said outer plunger into said first position;

an inner plunger slidably mounted within one end of said outer plunger for telescopic extension therefrom;

means for floatably retaining one end of said inner plunger within said outer plunger, thereby defining the maximum extension of said inner plunger from said outer plunger;

means for spring loading said inner plunger into its fully extended position; and

actuator means at the other end of said inner plunger for actuating a switching element mounted thereunder when said outer plunger is moved from said first to said second position, said actuator having a perimeter smaller than that of the adjacent portions of said housing to enable the actuator to float freely within said housing;

whereby said actuator is self-leveling to provide uniform contact with a switching element actuated thereby.

9. A telescoping plunger assembly for use in a low profile keyswitch comprising:

an outer plunger shaft;

an inner plunger shaft slidably mounted within one end of said outer plunger shaft for telescopic extension therefrom;

means for retaining one end of said inner plunger shaft within said outer plunger shaft; thereby defining the maximum extension of said inner plunger;

a switch actuator at the other end of said inner plunger shaft; and

a substantially flat piece of spring material sandwiched between said one end of said outer plunger shaft and said switch actuator and having a plurality of spring fingers cut therefrom with portions of said fingers protruding

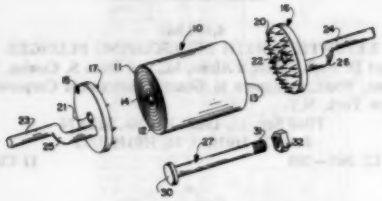
beyond the flat surface of said piece for spring loading said inner plunger shaft into its fully extended position.

4,454,563

ELECTRICAL CAPACITOR

Stephen A. James, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 14, 1982, Ser. No. 398,458
Int. Cl.³ H01G 1/14
U.S. Cl. 361—306 1 Claim



1. A wound capacitor comprising, in combination:

a helical capacitance roll having a mandrel hole extending axially therethrough and including electrodes spaced by dielectric layers, the electrodes projecting separately to opposite ends of the roll;

a pair of connecting discs at the ends of said roll having axial apertures and shaped to conform with said ends of said roll, each said disc having a first, roughened surface intimately engaging the electrode at an end of said roll, and having a conductor extending away from a site on a second surface thereof radially outward of said axis;

a rigid plastic fastener passing through said apertures and said hole from a head at one end to a nut threaded on the other end thereof to form a unitary assembly;

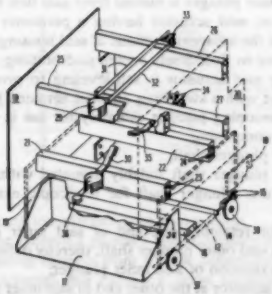
and protective means enclosing said assembly with said conductors extending therefrom at opposite ends thereof.

4,454,564

FABRICATED CARRIAGE ASSEMBLY FOR HIGH VOLTAGE CONTACTOR

Thomas R. Little; John D. Kleinecke, and Samir F. Farag, all of Wichita Falls, Tex., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Apr. 28, 1982, Ser. No. 373,030
Int. Cl.³ H02B 11/00
U.S. Cl. 361—336 8 Claims



1. A drawout contactor carriage for removably locating an electrical contactor within an enclosure, comprising:

first and second generally rectangular, sheet metal side plates having at least two opposed edges thereof bent outwardly, the confronting surfaces of said metal side plates being substantially flat and parallel to one another;

first and second generally planar insulative sheets extending generally parallel to, and at least partly overlapping, said metal side plates;

a plurality of metal cross members extending between said metal side plates and abutting said metal side plates in a common plane;

first and second insulative cross members extending between said metal side plates and abutting the confronting faces thereof, each of said insulative cross members carrying at least one stationary contact of a contactor assembly; and

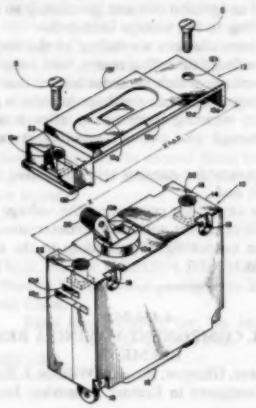
first and second insulative crossbars extending generally parallel to said insulative cross members and connecting said insulative sheets, said insulative cross members abutting said insulative sheets in a common plane.

4,454,565

ADAPTER PLATE ASSEMBLY FOR CIRCUIT BREAKER

Bohdan Krasij, Avon, and Charles Mune, West Hartford, both of Conn., assignors to Carlingswitch, Inc., West Hartford, Conn.

Filed Sep. 27, 1982, Ser. No. 424,509
Int. Cl.³ H02B 1/04
U.S. Cl. 361—376 4 Claims



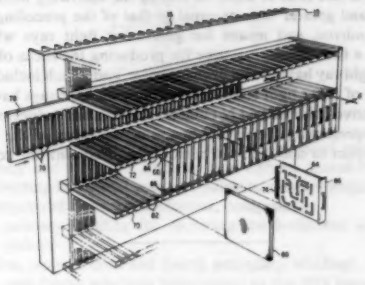
1. In combination, a circuit breaker and an adapter plate assembly for securing the circuit breaker in an oversiz panel opening, said circuit breaker having opposite end faces and a front face with a raised boss adapted to fit a small panel opening, said front face also having two threaded openings for receiving two mounting screws spaced from the boss and spaced from one another by a distance (X), said adapter plate assembly including a U-shaped adapter plate of one piece plastic with a resilient integrally formed leg portion at one end and an opposite leg end portion which cooperates with said resilient leg portion to define a rearwardly open recess for receiving said circuit breaker front face as a result of bending back said resilient leg end portion, said adapter plate leg portions having integrally formed inturned lips for entry in openings provided in said end faces of said circuit breaker to secure said plate to said circuit breaker, said opposite leg end portion of said adapter plate having a projection defining an opening, and a metal insert provided in said opening for receiving a mounting screw which is spaced a distance $(X+\Delta X)$ greater than X from one of said two threaded openings in said circuit breaker front face.

4,454,566

HEAT REMOVAL FROM CABINETS HOUSING ELECTRONIC EQUIPMENT

James C. Coyne, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 27, 1981, Ser. No. 325,329
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 1 Claim



1. An apparatus comprising a cabinet enclosing heat generating, densely packed electrical circuit elements disposed on a plurality of circuit boards, each of said circuit boards having along one edge thereof a faceplate and along the opposite edge a plurality of connector pins, said cabinet comprising

a thermally conductive rear wall having on an exterior side a plurality of heat dissipating fins,

a plurality of thermally conductive parallel shelves fastened in parallel to the interior side of said rear wall, said shelves comprising a plurality of grooves extending the width of said shelves,

at least one backplane member affixed in parallel to said rear wall between two adjacent shelves, said backplane member comprising a plurality of connectors,

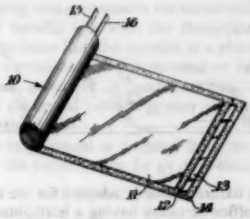
a plurality of thermally conductive partition plates disposed in alternate ones of said grooves between said two adjacent shelves and extending the width of said shelves from said backplane member to the front edges of said shelves and from the under surface of one of said adjacent shelves to the upper surface of the other of said adjacent shelves, said partition plates, said backplane member and said adjacent pair of shelves forming a plurality of interstitial spaces between said partition plates, each space comprising a groove in the upper surface and in the under surface of said adjacent pair of shelves which receives one of said circuit boards, one of said connectors on said backplane member mating with the connector pins of said inserted circuit board, the faceplate of said inserted circuit board forming an enclosed space, each circuit board being disposed between a pair of thermally conductive partition plates with the grooves that receive each circuit board being offset with respect to adjacent partition plate grooves so that each circuit board groove is closer to one partition plate groove immediately adjacent thereto than to the other partition plate groove immediately adjacent thereto.

4,454,567

ELECTROLYTIC CAPACITOR CONTAINING A MIXED SOLVENT SYSTEM

Sidney D. Ross, Williamstown, and Manuel Finkelstein, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 22,554, Mar. 21, 1979, abandoned. This application Jan. 13, 1983, Ser. No. 457,817
Int. Cl.³ H01G 9/02
U.S. Cl. 361—433 4 Claims



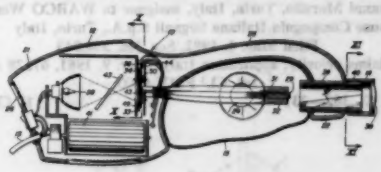
1. An electrolytic capacitor comprising a plurality of spaced electrodes, at least one of which is coated with a barrier layer dielectric oxide, interleaved spacers, and an electrolyte in contact therewith, said electrolyte comprising a solute dissolved in a solvent system wherein at least one first component functions as both an acceptor and as a donor in hydrogen bond formation and at least one second component functions only as an acceptor in hydrogen bond formation, said electrolyte having a resistivity curve which passes through a minimum point, all solute present is characterized by being non-reacting with any solvent component, said electrolyte composition being adjusted to provide said minimum resistivity.

4,454,568

LIGHT PATTERN GENERATOR

George O. Stadnik, Worcester, Mass., assignor to Interactive Entertainment Corp., Worcester, Mass.

Filed Mar. 15, 1982, Ser. No. 358,474
Int. Cl.³ F21V 7/04
U.S. Cl. 362—32 10 Claims



1. Light pattern generator, comprising:

(a) a main body,

(b) a light source located at a first position in the main body,

(c) a light-projecting element located at a second position in the main body, which second position is substantially spaced from the first position,

(d) a bundle of optical fibers mounted in the main body with one end located adjacent the light source for receiving light from said light source and the other end being adapted for transmitting said light to said element said other end being manipulable relative to the element for varying the light which is transmitted from said other end to said element, and

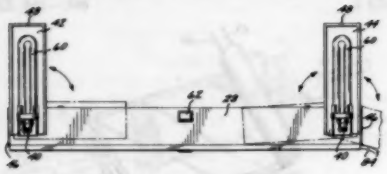
(e) a shield mounted on the said main body between the said first and second positions and surrounding the optical fibers while permitting access for the manipulation of the said other end of the optical fibers.

4,454,569

LIGHTING FIXTURE PRIMARILY ADAPTED FOR USE IN ASSOCIATION WITH MODULAR OFFICE FURNITURE

Paul R. Maguire, 4284 Sea View La., Los Angeles, Calif. 90065

Continuation-in-part of Ser. No. 270,929, Jun. 5, 1981, abandoned. This application Oct. 4, 1982, Ser. No. 432,581
Int. Cl.³ A47B 23/06
U.S. Cl. 362—127 35 Claims



1. A lighting fixture primarily adapted for use in association with modular office furniture having a horizontal surface and a pair of support tracks without the use of permanent fasteners, the fixture comprising:

an elongated housing adapted for incorporating a ballast and including a lower section and an upper section attached to each other;

first and second fluorescent tube holding members pivotably attached to a lower surface of the lower section of the housing for both vertical and horizontal movement;

removable fastening means attached to the upper surface of the upper section housing for movably mounting the housing underneath a substantially horizontal surface including a pair of spaced wire support elements which pass through slots in the housing in a relatively movable manner and are adapted to having their ends engage tracks along the horizontal surface, the ends further capable of free movement along the support tracks, and

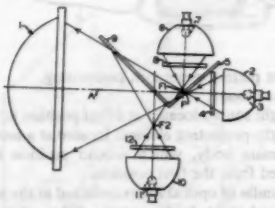
cable means for operatively connecting fluorescent tubes in the holding members to electrical power from a standard electric outlet.

4,454,570

MULTIPLE COLORED SEARCHLIGHT SIGNAL UNIT

Giovanni Morello, Turin, Italy, assignor to WABCO Westinghouse Compagnia Italiana Segnali S.p.A., Turin, Italy

Filed Mar. 4, 1982, Ser. No. 354,843
Claims priority, application Italy, Mar. 9, 1981, 67328 A/81
Int. Cl.³ F21V 9/00
U.S. Cl. 362—231 10 Claims



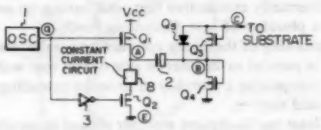
1. A multiple colored aspect signal unit for providing light rays with a primary color and with N number of secondary colors where N≧1, said N number of secondary colors having frequency bands higher than the frequency band of the primary color comprising, a support housing, a lens located in proximity of an aperture in said housing, means for generating light rays located inside the housing, an optical filtering system, interposed between said lens and said generating means, said optical filtering system determines the chromatic characteristics of the light emerging from the aperture of the housing through the lens, said optical filtering system including N number of dichroic mirrors each of which is associated with a respective color of said N number of secondary colors, each of said dichroic mirrors reflecting the light rays having frequencies equal to or greater than the frequencies of the band of color with which the filter is associated and transmitting the light rays having lower frequencies, said dichroic mirrors being arranged in fixed positions between said lens and the focus of the lens, so that, proceeding from the focus of the lens to the lens, the filtering frequency of each of said dichroic mirrors is less than or equal to that of the following dichroic mirror and greater than or equal to that of the preceding dichroic mirror, and means for generating light rays which include a first luminous source for producing the focus of the lens a light ray having said primary color, and which include N number of other light sources for producing light rays having a respective color of said N number of secondary colors at the point representing the virtual image of the focus of the lens with respect to said dichroic mirror associated with the color.

4,454,571

CIRCUIT FOR GENERATING A SUBSTRATE BIAS VOLTAGE

Takumi Miyashita, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 25, 1982, Ser. No. 392,076
Claims priority, application Japan, Jun. 29, 1981, 56-101125
Int. Cl.³ H02M 3/18
U.S. Cl. 363—60 9 Claims



1. A circuit for generating a substrate bias voltage in a semiconductor substrate, comprising:

an oscillator circuit for generating a periodic signal;

means for supplying a reference voltage level;

a capacitor having first and second terminals;

a first rectifier circuit operatively connected between the semiconductor substrate and the first terminal of said capacitor;

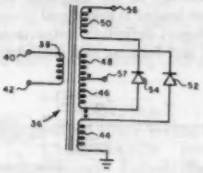
a second rectifier circuit operatively connected between said reference voltage supply means and the first terminal of said capacitor; and

a drive circuit, including a positive direction drive circuit, operatively connected between said oscillator circuit and the second terminal of said capacitor, for positively driving said second terminal of said capacitor, said drive circuit further including a negative direction drive circuit, operatively connected between said oscillator circuit and the second terminal of said capacitor, for inverting the periodic signal and for negatively driving said second terminal of said capacitor, said negative direction drive circuit including a current limiting circuit for limiting the peak value of the current in said capacitor when said first rectifier circuit is placed in a conductive state.

4,454,572
FLYBACK TRANSFORMER WITH IMPROVED REGULATION

Theodore J. Godawski, Des Plaines, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed May 27, 1982, Ser. No. 382,525
Int. Cl.³ H02M 7/10; H01F 35/00
U.S. Cl. 363—68 **4 Claims**



1. In a display device operating at a horizontal retrace frequency and having a high voltage flyback transformer for converting horizontal scan rate pulses to a high voltage output, an improved flyback transformer, comprising:

a primary winding for receiving the horizontal scan rate pulses;

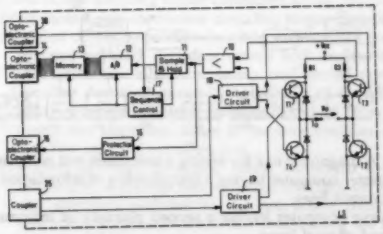
first, second, third and fourth secondary windings, the first and fourth windings being tuned to the fifth harmonic of the horizontal retrace frequency, and the second and third windings being tuned to the seventh harmonic of the horizontal retrace frequency such that the peaks of the horizontal rate pulses developed by the first and fourth windings are complimentary to the peaks of the horizontal rate pulses developed by the second and third windings; and

means for combining the outputs of the first and third windings and of the second and fourth windings so as to develop horizontal rate output pulses whose peaks are substantially flat.

4,454,573
CURRENT REGULATOR CIRCUIT

Johann Petsch, Poing, Fed. Rep. of Germany, and Eric F. Kohn, Le Petit-Lancy-Genf, Switzerland, assignors to ASR Servotron AG, Le Petit-Lancy-Genf, Switzerland

Filed Aug. 9, 1982, Ser. No. 406,477
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1981, 3131574
Int. Cl.³ G05B 11/28; H02P 5/16
U.S. Cl. 363—98 **10 Claims**



1. A current regulator circuit for a DC load comprising:

a power driver stage comprising:

power switches connected in a bridge circuit, and

means for generating an actual-value signal corresponding to the current flowing in the load, and

a control stage comprising:

means for comparing the actual-value signal with a theoretical-value signal and generating error signals corresponding to the difference,

means for using said error signals to control the power switches, and

means for DC-isolating the power driver stage characterized in that:

the generating means comprises an A/D converter which generates the actual-value signal as a binary code having a multiplicity of bits, based on its sampling of the current that flows in the load,

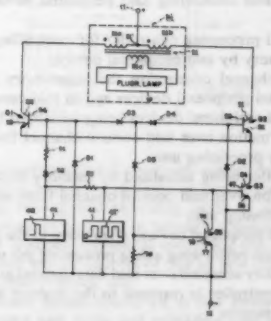
the comparing means compares the actual-value signal in the form of parallel bits with the theoretical-value signal, where the latter likewise consists of a plurality of parallel bits and corresponds to a prescribed or desired load current, and generates different outputs depending on whether the actual value is greater or less than the theoretical value, and

the actual-value signal is coupled from the power driver stage to the control stage by an opto-electronic coupler.

4,454,574
PUSH-PULL STORED CHARGE INVERTER CIRCUIT WITH RAPID SWITCHING

Alvin A. Bush; John Giorgis, Jr., and Thomas E. Anderson, all of South Euclid, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,780
Int. Cl.³ H02M 7/537
U.S. Cl. 363—134 **12 Claims**



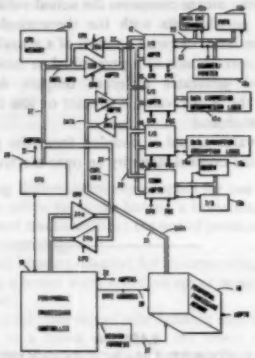
1. A push-pull inverter circuit comprising a load having an inductive component, a pair of transistors connected to said load for push-pull operation thereof, means for rendering the transistors alternately conductive by stored charges produced by flyback induced voltage in said load, said means including a control circuit for periodically rendering both of said transistors simultaneously incapable of conduction and causing removal of any remnant stored charge therefrom, and means activated by a first one of said pair of transistors being turned off for inducing a voltage in said inductive component of said load to cause an electrical charge to be stored in the other of said pair of transistors to render said other of said transistors conductive; said control circuit further comprising means connected electrically in series with the respective emitters of each transistor of said pair of transistors for causing normal current to flow in the collector-emitter path of said other of said transistors.

4,454,575

SHARED MEMORY SYSTEM WITH ACCESS BY SPECIALIZED PERIPHERALS MANAGED BY CONTROLLER INITIALIZED BY SUPERVISORY CPU

Kenneth A. Bushaw, Longmont, and Milton H. Woodward, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,637
Int. Cl.³ G06F *3/00, 13/00, 9/38*
U.S. Cl. 364—200 **17 Claims**



4. A data processing system for processing data in peripheral devices, said system comprising:

a supervisory processing unit for generating job control information and memory access control information;

a memory;

a plurality of peripheral data-processing devices;

a data channel connecting said peripheral devices to said memory;

a peripheral processing controller for controlling access to said memory by said peripheral device;

a control channel connecting the supervisory processing unit to said peripheral devices and to said controller;

each of said peripheral devices being initialized by job control information over said control channel from said supervisory processing unit;

said controller being initialized by memory access control information over said control channel from said supervisory processing unit;

each of said peripheral devices responsive to the job control information performing a data processing job with data in said memory accessed over said data channel as controlled by said controller in response to the memory access control information.

4,454,576

REPORT PREPARATION

John W. McInroy; Paul D. Waldo; Jo A. Elliott; Thomas L. Adam, all of Austin, and Freddie R. White, Georgetown, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,624
Int. Cl.³ G06F *3/02, 3/14*
U.S. Cl. 364—200 **11 Claims**

1. A system for preparing multiple report definition instructions for a shell document to control logical separation on output of a file report generated by an electronic digital signal processor, comprising:

a menu listing of report definition instructions stored in a memory associated with the signal processor:

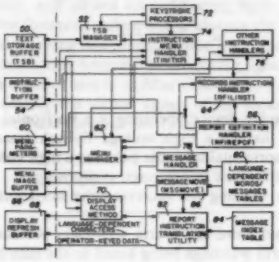
means for accessing and displaying said menu of report definition instructions;

means for an operator to select any of said report definition instructions from said displayed menu;

means for operator entry of report text between said selected report definition instructions;

means for loading a system program in said signal processor, said system program written to support operators who read a particular language;

means for transferring said operator-selected report definition instructions and operator-entered report text to said memory for storage in the language supported by the system program loaded in said signal processor, said operator-selected report definition instructions and operator-entered report text forming said shell document;



means for selectively translating said shell document to the language supported by a current system program loaded in said signal processor when said current system program supports a language different from the language supported by the system program loaded when said shell document was formed; and

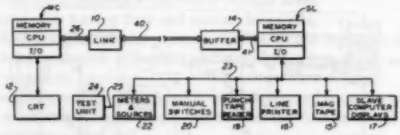
means for displaying said shell document for generating a file report, said shell document being displayed in the language of said current program loaded in the processor, wherein the display of multiple report definition instructions may be presented in a meaningful way for operators that read different languages.

4,454,577

LINKED DATA SYSTEMS

John J. Costantini, Sommerville; Thomas O. Weilbacker, Northvale, and Joseph A. Guglielmo, Rockaway, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Jun. 18, 1981, Ser. No. 274,951
Int. Cl.³ G06F *11/04*
U.S. Cl. 364—200 **16 Claims**



13. A diagnostic link for testing a unit under test comprising:

a master computer having a first plurality of information and control lines;

a slave computer having a second plurality of information and control lines;

a measuring instrument having a test terminal arranged to be connected to said unit for measuring an operating parameter thereof, said instrument being connected to said slave computer for transmitting requested measurements thereto; and

a computing means connected between said first and second plurality of lines, said computing means being operable to transfer information from said master to said slave com-

puter to control it and said instrument, said slave computer having a slave program alterable by said computing means to debug said slave program, said slave computer containing at least two program steps for immediately consecutive execution by said slave computer without intervention between steps by said computing means, said computing means comprising:

processing means for translating and transferring information on said first plurality of lines, said information including at least one slave programming instruction adapted to program said slave computer; and

memory means for storing information transmitted on said first plurality of lines, said memory means being operable to store said slave programming instruction.

4,454,578

DATA PROCESSING UNIT WITH PIPELINED OPERANDS

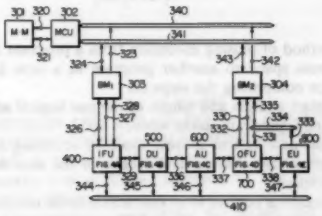
Hidekazu Matsumoto, Hitachi; Tadaaki Bandoh, Ibaraki, and Hideo Maejima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,168

Claims priority, application Japan, May 19, 1980, 55-65267; Oct. 8, 1980, 55-139835

Int. Cl.³ G06F 9/42, 9/34, 9/36

U.S. Cl. 364—200 **17 Claims**



1. A data processing unit for executing variable length instructions in which operand specifiers for specifying addressing modes of operands are independent from operation codes for ascertaining operations, comprising:

(A) instruction fetch means connected to memory means for storing instructions and operands, said instruction fetch means including,

(1) instruction prefetch means for prefetching and retaining instructions from said memory means, and

(2) instruction alignment means for aligning bit sequences of instructions including at least one operand specifier prefetched from said memory means;

(B) instruction decoding means connected to said instruction fetch means, said instruction decoding means including,

(1) a first operand specifier decoding means and a second operand specifier decoding means both connected to said instruction alignment means, said second operand specifier decoding means being capable of decoding a next sequential operand specifier received from said instruction alignment means in the same machine cycle as a first operand specifier; and

(2) operation code decoding means connected to said instruction alignment means for ascertaining the operand specifiers included in the instruction from said instruction alignment means and ascertaining the function of said instruction, said operand decoding means including a simultaneous decode permission means for issuing a signal to permit simultaneous decoding of two operand specifiers within the same machine cycle, said permission signal being provided to said second operand specifier decoding means, said second operand specifier decoding means decoding the next sequential operand specifier to the operand specifier decoded by said first operand specifier decoding means only when said permission signal is provided thereto, and

(C) address calculation means connected to said instruction decoding means for calculating an effective address of the operand in accordance with information of an operation code and operand specifiers decoded by said instruction decoding means in the previous machine cycle,

whereby said instruction fetch means, said instruction decoding means and said address calculation means carry out their processes in parallel, and said instruction decoding means and said address calculation means carry out their process for each operand specifier.

4,454,579

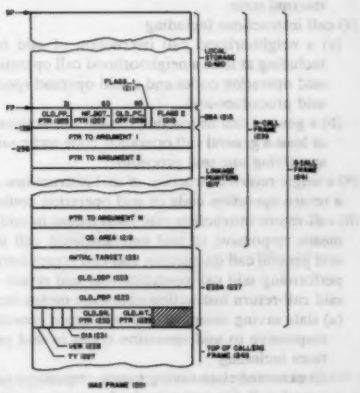
SYSTEM FOR PERFORMING CALL AND RETURN OPERATIONS

John F. Pilat, Raleigh; Douglas M. Wells, Chapel Hill; Eric Hamilton, and J. Theodore Compton, both of Durham, all of N.C., assignors to Data General Corporation, Westboro, Mass.

Filed Sep. 11, 1981, Ser. No. 302,322

Int. Cl.³ G06F 9/40

U.S. Cl. 364—200 **11 Claims**



1. In an improved digital computer system including

(A) memory means for performing memory operations including storing and providing items of data including instructions in response to memory commands, each one of said memory commands specifying one said memory operation and an address of one of said items of data in said memory means, and

(B) processor means connected to said memory means for processing said items and providing said memory commands in response to operation codes in said instructions, and wherein

said instructions further contain operands representing said items,

said instructions are contained in procedures of said items,

said processor means performs an execution of a given said procedure by responding to said instructions contained in said given procedure,

said processor means contains internal state stored in internal registers of said processor means for said execution currently being performed by said processor means, and

said items further include

a single frame item associated with each unterminated said execution,

improved call-return means for performing a call operation suspending a current said execution and commencing a new said execution and a return operation terminating said current execution and resuming said execution which was suspended

to commence said execution being terminated, said improved call-return means comprising:

(1) basic internal state in said internal state which changes as a result of every said call operation and every said return operation, said basic internal state including

basic addressing state for calculating said addresses in said processor means,

(2) extended internal state in said internal state which changes only as a result of certain said call operations and certain said return operations, said extended internal state including

extended addressing state for calculating said addresses in said processor means,

(3) said frame items include a basic frame item of said frame items and an extended frame item of said frame items, said basic frame item and said extended frame item both containing

(a) a frame type item indicating whether said frame item is said basic frame item or said extended frame item and

(b) a basic state item containing stored said basic internal state, and

said extended frame item further containing

(c) an extended state item containing stored said extended internal state;

(4) call instructions including

(a) a neighborhood call instruction of said instructions including at least a neighborhood call operation code of said operation codes and a said operand specifying one said procedure and

(b) a general call instruction of said instructions including at least a general call operation code and a said operand specifying one said procedure;

(5) a single return instruction of said instructions containing a return operation code of said operation codes; and

(6) call-return instruction execution means in said processor means responsive to said neighborhood call instruction, said general call instruction, and said return instruction for performing said call operation and said return operation, said call-return instruction execution means including

(a) state saving means in said call-return execution means responsive to said operation codes in said call instructions including

(i) extended state saving means responsive to said general call operation code for storing said extended internal state and said basic internal state in said extended frame item for said execution being commenced and setting said frame type item to indicate one of said extended frame items and

(ii) basic state saving means responsive to said neighborhood call operation code for storing said basic internal state in said basic frame item for said execution being commenced and setting said frame type item to indicate one of said basic frame items;

(b) internal state setting means responsive to said operation codes in said call instructions including

(i) extended internal state setting means responsive to said general call operation code for setting said basic internal state and said extended internal state as required for said new execution and

(ii) basic internal state setting means responsive to said neighborhood call operation code for setting only said basic internal state as required for said new execution; and

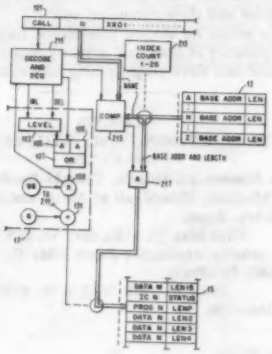
(c) state restoration means responsive to said single return operation code and to said frame type item for restoring said basic internal state from said basic state item and said extended internal state from said extended state item in response to said return operation code when said frame type item specifies said extended frame item and otherwise restoring only said basic internal state from said basic state item.

4,454,580

PROGRAM CALL METHOD AND CALL INSTRUCTION EXECUTION APPARATUS

Howard L. Page, and James A. Wingert, both of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 16, 1981, Ser. No. 302,932
Int. Cl.[3] G06F 9/00
U.S. Cl. 364—200 5 Claims



1. The method of passing execution from a program in one logical address space to another program in a new logical address space comprising the steps of:

storing a start address and length of the one logical address space and a program status word;

creating the new logical address space by accessing a table to obtain a start address and length of the new logical address space;

passing execution control to an instruction in the new logical address space;

executing at least another instruction in the new logical address space;

retrieving the start address and length of the one address space and the program status word; and

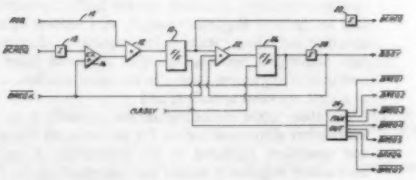
passing execution control to the next sequential instruction in the one address space.

4,454,581

BUS CONTENTION CIRCUIT

Michael C. Nystrom, New Brighton, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jun. 1, 1982, Ser. No. 383,900
Int. Cl.[3] G06F 364/200
U.S. Cl. 364—200 13 Claims



1. A contention circuit for resolving priority conflicts between a plurality of priority-ordered units capable of seizing a bus comprising, at each unit: bus request storage means operable to store a signal representative of a request by the respective unit to seize use of the bus, said bus request storage means providing a bus common request signal to the contention circuit associated with all the units; priority output means respon-

sive to the operation of said bus request storage means for providing a bus request signal to each contention circuit associated with lower-ordered units; first logic means responsive to the bus common request signal from each of said contention circuits, to the bus request signals from the contention circuits from each of the higher-ordered units and to a request from the associated unit to seize use of the channel, to operate said bus request storage means upon a request from the associated unit to seize use of the channel and either the absence of a bus common request signal or the presence of both a bus common request signal and a bus request signal from a higher-ordered unit, said first logic means not operating said bus request storage means if said bus common request signal is present and no bus request signal is present from a higher-ordered unit; bus busy means for providing a bus busy signal to all of the contention circuits representative that the unit is using the bus; and second logic means responsive to the bus busy signal, to the bus request signal and to operation of the respective bus request storage means to operate the respective bus busy means upon operation of the respective bus request storage means and absence of said bus request signal from higher-ordered units and absence of said bus busy signal.

4,454,582

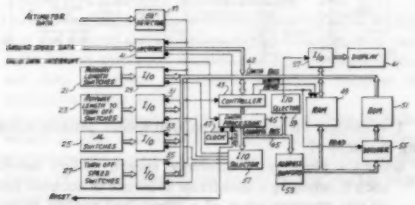
METHOD AND APPARATUS FOR CONTINUOUSLY DETERMINING A CHRONODRASIC INTERVAL

Patrick J. Cleary, Federal Way, and Craig A. Hopperstad, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 59,664, Jul. 23, 1979, abandoned. This application Mar. 18, 1982, Ser. No. 359,269

Int. Cl.³ G06F *15/50*; G01C *21/00*

U.S. Cl. 364—427 **46 Claims**



1. A method of determining the amount of a parameter remaining to take maximum control action to achieve a desired objective (e.g., the chronodrasic interval) comprising the steps of:

determining the amount of a parameter required to achieve the desired objective if maximum control action is immediately applied;

determining the amount of the parameter remaining:

deducting the amount of the parameter required to achieve the desired objective if maximum control action is immediately applied from the amount of the parameter remaining;

determining a preselected rate of change of the parameter; and,

dividing the result of deducting the amount of the parameter required to achieve the desired objective if maximum control action is immediately applied from the amount of the parameter remaining by the preselected rate of change of the parameter.

4,454,583

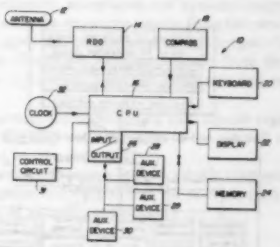
NAVIGATION SYSTEM

Edward M. Schneiderhan, Glenview; Micheal V. Pathe, Waukegan, and Kurt R. Schaffert, Northbrook, all of Ill., assignors to Signal Scanning Products, Inc., Northbrook, Ill.

Filed Jun. 30, 1981, Ser. No. 279,208

Int. Cl.³ G01S *5/04*; G06F *15/50*

U.S. Cl. 364—449 **22 Claims**



1. A navigation system for determining the location of a vehicle from the radio transmissions of two or more radio signal sources of known frequency and location in proximity of the vehicle comprising:

means for entering and storing the frequencies and longitude and latitude positions of the at least two selected radio sources;

a rotatable directionally sensitive antenna;

means for rotating said directionally sensitive antenna through 360° in a step-wise fashion and providing signals representative of the angular position of said antenna in relation to the heading of the vehicle;

means for detecting the heading of the vehicle and generating heading signals representative of said heading;

means for detecting the stored frequencies of the at least two selected radio signal sources and causing said means for rotating to rotate said directionally sensitive antenna until said directionally sensitive antenna is positioned in a signal null position for each of said radio signal sources:

means for comparing said angular position signals representative of the signal nulls with the heading signals to provide compass null headings for each of said radio signal sources;

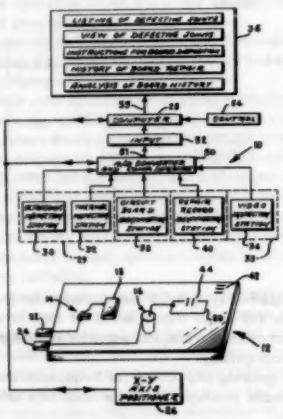
means for differentiating between real null headings and false null headings for each of said radio signal source;

means for converting the point of intersection of said real null headings into corresponding longitude and latitude values for said vehicle;

means for visually displaying said longitude and latitude values for the location of said vehicle.

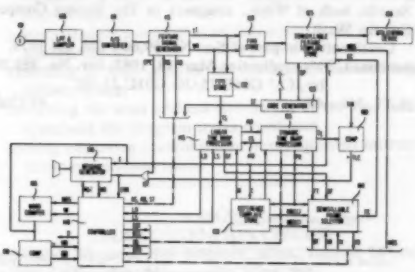
4,454,584
Patent Not Issued For This Number

4,454,585
PRINTED WIRING BOARD INSPECTION, WORK LOGGING AND INFORMATION SYSTEM
John H. Ele, 584 34th St., Sacramento, Calif. 95816
Filed May 28, 1981, Ser. No. 267,939
Int. Cl.³ G06F *15/20*; G01R *15/12*
U.S. Cl. 364—507 **7 Claims**



1. A system for inspecting and providing information with respect to the type, history, and repair record of a device having electrical components therein and solder joints associated therewith comprising:
(a) means for supporting said device, moving said device to a plurality of positions in two directions and providing a signal indicative of said positions;
(b) means juxtaposed said device for inspecting said solder joints thermally and providing a signal indicative of the condition of said solder joints;
(c) means juxtaposed said device for inspecting said solder joints acoustically and providing a signal indicative of the condition of said solder joints;
(d) means juxtaposed said device for inspecting said solder joints visually and providing a signal representative of the condition of said solder joints, said visual inspection means becoming operable based upon the type of signals provided from said thermal inspection means and said acoustic inspection means;
(e) means juxtaposed said device for examining said device and providing a signal reresentative of information about said device being inspected;
(f) coded marks located on said device and said components for providing information about said components and solder joints on said device being inspected;
(g) means juxtaposed said device for reading said coded marks and providing a signal representative of information about said components and said solder joints on said device being inspected; and
(h) means for receiving said signals from said supporting means, said thermal inspection means, said acoustic inspection means, said visual inspection means, said device examining means, and said means for reading said coded marks, and correlating said signals into an output indicative of the acceptability or nonacceptability of said solder joints.

4,454,586
METHOD AND APPARATUS FOR GENERATING SPEECH PATTERN TEMPLATES
Frank C. Pirz, Madison; Lawrence R. Rabiner, Berkeley Heights, and Jay G. Wilpon, Warren, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 19, 1981, Ser. No. 322,748
Int. Cl.³ G10L *1/00*
U.S. Cl. 364—513.5 **21 Claims**



1. A method for producing subunit speech patterns comprising the steps of:
storing a plurality of reference speech pattern templates each comprising a time frame sequence of acoustic feature signals representative of a prescribed spoken reference speech pattern; storing a set of signals each representative of the time of occurrence of at least one predetermined subunit in the reference acoustic feature signal sequence for each reference speech pattern; analyzing an utterance of one of said stored reference speech patterns to generate a time frame sequence of acoustic feature signals representative of the utterance; generating signals representative of the time alignment of said utterance feature signal sequence and said stored reference speech pattern feature signal sequence; and determining the sequence of utterance feature signals corresponding to the predetermined subunit in said stored reference speech pattern template responsive to the time alignment signals and said reference subunit time of occurrence representative signals.

4,454,587
METHOD AND CIRCUIT ARRANGEMENT FOR DISCRIMINATING BETWEEN PULSES GENERATED BY ALPHA AND/OR BETA RADIATORS

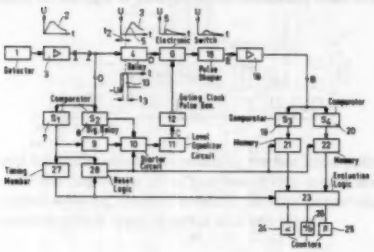
Hans Kiefer, Eggenstein-Leop.; Hans-Gerd Röber, and Bernd Reinhardt, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 14, 1981, Ser. No. 283,189

Claims priority, application European Pat. Off., Apr. 25, 1981, 81103119

Int. Cl.³ G01T 1/15

U.S. Cl. 364—527 10 Claims



1. Method for discriminating detector pulses generated in a detector by alpha and/or beta radiators, comprising the steps of:

(a) detecting the alpha and/or beta radiation and producing detector pulses in response to detected radiation wherein the leading edges of said pulses rise, in a starting region of predetermined duration which lies in the nanosecond range, in a particle specific, almost constant manner and the pulses generated by alpha particles have a slope (β) which is substantially greater than the slope (β) of pulses generated by the beta particles;

(b) establishing first, second, third and fourth predetermined successively increasing threshold values;

(c) comparing the amplitude of each detector pulse to said first and second threshold values and counting each said pulse whose amplitude exceeds said first threshold value and does not reach said second threshold value as an unequivocal beta signal;

(d) measuring the amplitude (A_α, A_β) of each detector pulse which exceeds said second threshold value during a first predetermined constant time period (t_1) which lies in said region of almost constant rise (α, β) of said leading edge (time discrimination); and

(e) comparing the signal amplitudes (A_α, A_β) of said detector pulses as measured by time discrimination during said step (d) with said third and fourth threshold values to effect the following associations of said detector pulses:

(1) counting each measured pulse amplitude above said highest fourth threshold value as an unequivocal alpha signal;

(2) counting each measured pulse amplitude above said second threshold value and below said third threshold as an unequivocal beta signal; and

(3) separately counting each measured pulse amplitude above said third threshold value and below said fourth threshold value as an alpha or beta pulse which is evaluated as the quality which constitutes the error quota of said measurement.

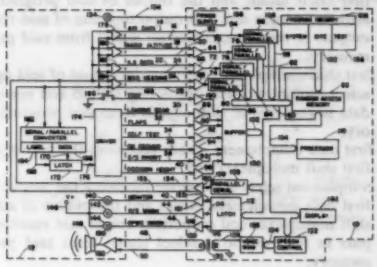
4,454,588
AUTOMATIC ACCEPTANCE TEST SYSTEM FOR AIRCRAFT COMPUTERS

James P. O'Brien, Redmond, Wash., assignor to Sundstrand Data Control, Inc., Rockford, Ill.

Filed Sep. 16, 1981, Ser. No. 302,874

Int. Cl.³ G06F 11/00

U.S. Cl. 364—551 8 Claims



1. An automatic acceptance test system for use with an aircraft computer having a plurality of data signal inputs, a plurality of discrete data inputs and a plurality of outputs wherein the automatic acceptance test system comprises:

first input means for receiving signals from the aircraft computer outputs representing aircraft test output data;

second input means for receiving signals from the aircraft computer representing aircraft computer test input data signals;

transmitter means for transmitting said signals representing aircraft computer test input data to the aircraft computer data signal inputs; and

indicator means responsive to said signals representing aircraft computer test output data for providing an operator indication of aircraft output data.

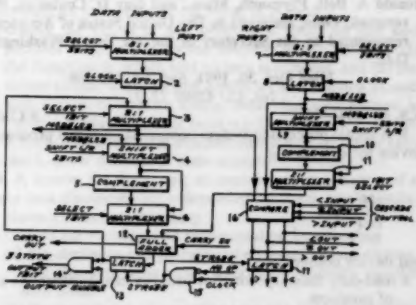
4,454,589
PROGRAMMABLE ARITHMETIC LOGIC UNIT

Gary I. Miller, Los Angeles, Calif., assignor to The Unite States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1982, Ser. No. 357,440

Int. Cl.³ G06F 7/50; H03K 19/20

U.S. Cl. 364—716 5 Claims



1. In combination with a high speed program memory and a program address controller a programmable arithmetic logic unit having an output, said programmable arithmetic logic unit comprising:

at least one m bit circuit element, m being an integer, having first and second channels,

said first channel comprising

a first input multiplexer receiving n, m bit data inputs, n being an integer, said first input multiplexer being controlled by a select signal from said program memory,

a first latch means receiving and outputting the output of said first input multiplexer, said first latch means being strobed by a clock and holding the output of said first input multiplexer during a clock count,

an operand select multiplexer receiving the output of said first latch means and the output of said programmable arithmetic logic unit and outputting one of said received outputs in response to a select signal from said program memory,

a first shift multiplexer receiving the output of said operand select multiplexer and outputting shifted and non-shifted data in response to shift signals from said program memory,

a first data complement means receiving the output of said first shift multiplexer and

a complement select multiplexer receiving the output of said first data complement means and the output of said first shift multiplexer and outputting one of said received outputs in response to a select signal from said program memory;

said second channel comprising

a second input multiplexer receiving n, m bit data inputs, n being an integer, said second input multiplexer being controlled by a select signal from said program memory,

a second latch means receiving and outputting the output of said second input multiplexer, said second latch means being strobed by a clock and holding the output of said second input multiplexer during a clock count,

a second shift multiplexer receiving the output of said second latch means and outputting shifted and non-shifted data in response to shift signals from said program memory,

a second data complement means receiving the output of said second shift multiplexer, and

a second complement select multiplexer receiving the output of said second data complement means and the output of said second shift multiplexer and outputting one of said received outputs in response to a select signal from said program memory; and,

adder means receiving the output of said first channel complement select multiplexer and the output of said second channel complement select multiplexer and providing an arithmetic logic unit output therefrom.

4,454,590

PROGRAMMABLE SIGNAL PROCESSING DEVICE

Ronald A. Belt, Plymouth, Minn., and Guy D. Couturier, Beavercreek, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 30, 1981, Ser. No. 315,599

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **9 Claims**

1. A signal processing system comprising a signal processing device for calculating

$$\sum_{i=1}^{M} W_i X_i$$

said device comprising:

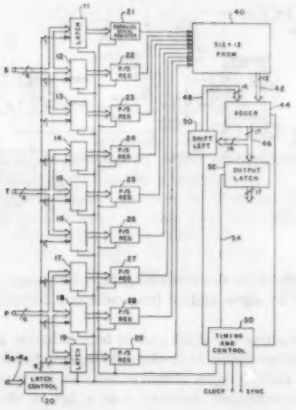
a read-only memory which is programmed to store the sum of products

$$\sum_{i=1}^{M} W_i B_i$$

in 2^M words, where B_i have binary values of 0 or 1 and W_i are weighting coefficients for a given application, the memory addresses being the 2^M different sets of B_i for words of M bits;

input means comprising M_m first registers, each of which provides storage for a word of N bits, input bus means having at least one input bus with parallel conductors for N bit positions coupled via input gate means to the first registers, input address means connected to control the input gate means to enter M words of data X_i from the input bus means into corresponding input registers, M for a given application having a positive integer value equal to or less than M_m, M_m parallel-to-serial registers coupled via transfer gate means to the first registers, control means which includes means for controlling transfer of the data words from the first register via the transfer gate means to the parallel-to-serial registers;

memory address means for said memory coupled to the parallel-to-serial registers to form addresses with one bit from each parallel-to-serial register in a given bit position;



output means including an adder-accumulator and a shift circuit, the adder-accumulator having a first input from the output of said memory and a second input from the shift circuit, and a connection from the adder-accumulator output to the shift circuit input;

said control means including timing means for providing successive clock cycles; the device being operative, after the data words are loaded into the parallel-to-serial registers and the shift circuit is cleared, during each clock cycle to use an address from the memory address means and supply the memory word at that address to the first input of the adder-accumulator and add it to the word from the shift circuit, and then in the shift circuit to shift the resulting word from the adder-accumulator one bit, so that after N clock cycles each word output from memory has been effectively multiplied by 2/ and accumulated in the sum.

4,454,591

INTERFACE SYSTEM FOR BUS LINE CONTROL

Perry W. Lou, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1980, Ser. No. 154,560

Int. Cl.³ G06F *13/00, 3/00*

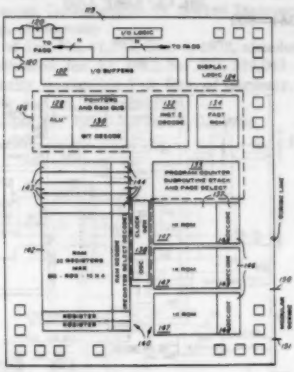
U.S. Cl. 364—900 **11 Claims**

1. An interface system comprising:

a bus means including at least one bus line;

at least one bus driver means for driving each of said bus lines to a selected one of two logic voltages thereby generating a predetermined logic state on said bus means when said bus driver means is actuated and for isolating each of

said bus lines from each of said logic voltages by a high impedance when said bus driver means is inactivated; and a default state latch means coupled to said bus means for continuously sensing the voltages on each of said bus lines

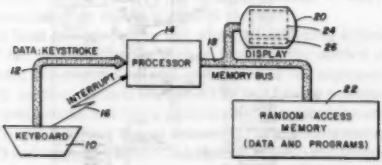


and for automatically maintaining the last logic voltage on each bus line when all of said bus driver means are inactuated without external control, thereby preserving said predetermined logic state on said bus means.

4,454,592
PROMPT LINE DISPLAY IN A WORD PROCESSING SYSTEM

William C. Cason, Austin; Freddie R. White, Georgetown; Thomas L. Adam, and Lewis J. Levine, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,818
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **32 Claims**



1. In a word processing system having a keyboard, visual display and a processor responsive to said keyboard for controlling said visual display, the combination comprising:

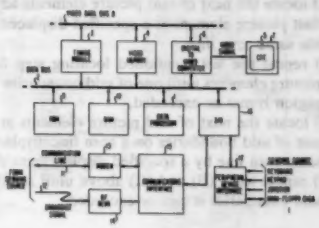
first means controlled by said processor for displaying on a first predetermined area of the display information entered through the keyboard to be processed by the processing system, and

second means controlled by said processor for displaying on a second predetermined dedicated area of the display prompt instructions to inform the operator of desired or required actions to be taken via said keyboard, said second means also for displaying on said second predetermined dedicated area all information input by said operator in response to said prompt instructions.

4,454,593
PICTORIAL INFORMATION PROCESSING TECHNIQUE

James R. Fleming, Indianapolis, Ind.; William A. Frezza, North Brunswick, and Gerald S. Soloway, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,069
Int. Cl.³ G06F *3/14, 15/20*; G06K *15/20*
U.S. Cl. 364—900 **14 Claims**



1. A method for displaying a picture on a display device comprising the steps of:

defining said picture in terms of a unit screen coordinate space comprising a plurality of generally rectangular logical picture elements (pels) having a predefined width dx and a predefined height dy, each of said pels having an associated N-bit code word indicating its visual attributes;

mapping the location of a first one of said logical pels from said unit screen coordinate space to a corresponding location in a display memory which includes an array of discrete storage locations arranged in a plurality of rows and columns;

writing the N-bit code word associated with said first logical pel in storage locations identified in said mapping step;

repeating said mapping and writing steps for each of said logical pels defining said picture; and

sequentially applying the contents of said display memory to a display device,

wherein said defining step includes:

generating a series of samples each representing the attributes of a particular element of said picture, said elements lying along a plurality of generally parallel raster scan lines;

converting each of said samples to an N-bit digital word;

sequentially assembling each of said words in the M-bit active portions of a stream of bytes, where M and N need not be interger multiples;

encoding an indication of the value of N; and

encoding the values of said predefined width dx and said prefined height dy as signed numbers which indicate: (1) the direction in which said picture is scanned, and (2) the values of said width dx and height dy as a fraction of said unit screen coordinate space, such that said picture is entirely displayed as long as $dx = 1/P$ and $dy = 1/L$, where P is the number of said samples on each of said scan lines and L is the number of lines scanned.

14. A system for displaying an encoded representation of a picture on a display device independent of the device's resolution characteristics, comprising:

(1) means for forming said representation by encoding

(a) the attributes of a plurality of elements of said picture, said elements lying along a series of generally parallel scan lines,

(b) the boundaries of the active area of a unit screen coordinate space which defines a portion of a display memory into which said pels are to be mapped, and

(c) the location of the first of said picture elements in said active area;

(2) means for locating the coordinates of each of said pels with respect to said unit screen coordinate space;

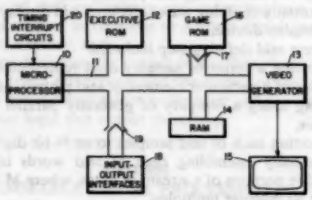
(3) means for mapping the coordinates of each pel formed by the last mentioned means to a rectilinear array representing storage locations in said display memory;
(4) means for writing said attributes of each pel into at least one of the storage locations mapped in said last mentioned means; and
(5) means for sequentially reading said attributes stored in said memory to form a signal for application to said display,
wherein said location means is arranged to:
(A) locate the next of said picture elements adjacent to said first picture element at a specified displacement dx along the same scan line;
(B) repeat the last mentioned locating step for successive picture elements until one of said boundaries of said active region is met or exceeded,
(C) locate the next of said picture elements at the opposite one of said boundaries on a scan line displaced from said same scan line by a specified displacement dy, and
(D) repeat steps (B) and (C) above until a different one of said boundaries is met or exceeded.

4,454,594

METHOD AND APPARATUS TO SECURE PROPRIETARY OPERATION OF COMPUTER EQUIPMENT

Charles B. Heffron; Roberto Lenarduzzi, both of Knoxville, Tenn., and Jack E. Haken, Danbury, Conn., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1981, Ser. No. 324,743
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—900 **33 Claims**



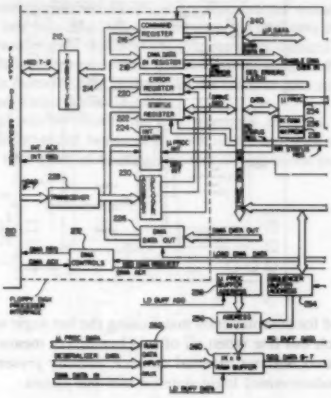
1. In electronic apparatus which includes:
digital computer means which functions to produce a sequence of two or more output signal states which are at least partially determined by stored program instructions;
connecting means attached to the computer means which functions to receive stored program instructions from a source which is physically separable from the computer means and to supply the received instructions to the computer means; and
display means which functions to produce an audible and/or visual message and/or display in response to one or more distinct output signal states of the computer means, which states are at least partially determined by the received program instructions;
the improvement comprising comparison means attached to the computer means, which includes recorded reference information, which functions to detect congruence between said one or more distinct output signal states of the computer means and the reference information, and which inhibits the computer means from producing at least one output signal state in the absence of said congruence.

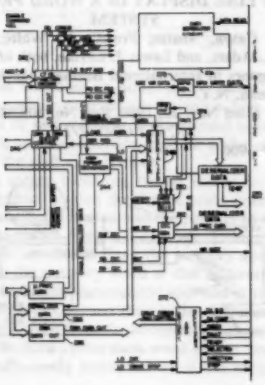
4,454,595

BUFFER FOR USE WITH A FIXED DISK CONTROLLER

Curtis Cage, Santa Clara, Calif., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 23, 1981, Ser. No. 334,037
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—900 **49 Claims**





1. A controller for transferring data to a disk drive comprising:
(a) interfacing means for receiving information to be transferred to a disk drive;
(b) processing means operatively connected to said interfacing means for controlling the transfer of said information to said disk drive; and
(c) temporary memory storage means operatively connected to said processing means.

4,454,596

FREE-PROGRAMMABLE, MODULAR CONTROL SYSTEM WITH INTEGRATED USER DEFINABLE DISPLAY AND OPERATING DEVICES

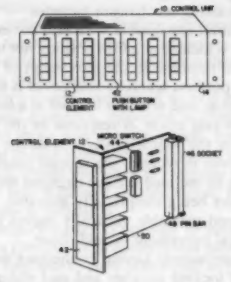
Reinhold Wunsch, Friedrich-Ebert Str. 62, D-4150 Krefeld, and Albrecht Lezius, Corneliusplatz 65, D-4154 Tönisvorst 1, both of Fed. Rep. of Germany

Continuation of Ser. No. 81,793, Oct. 4, 1979, abandoned. This application Jan. 13, 1982, Ser. No. 339,043

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844388; Apr. 18, 1979, 2915528

Int. Cl.³ G06F *15/46, 15/02, 9/06*

U.S. Cl. 364—900 12 Claims



1. An electric display and control unit, comprising:

(a) at least one control element comprising several push buttons, each push button being combined with signal light means, whereby all the push buttons with signal light means are mechanically and electrically of equal construction, and a plug-in board, the push buttons with signal light means being provided on one end of the plug-in board in a side-by-side relationship in such a way that with the plug-in board being in working position the push buttons with signal light means are visible and operable individually from the front side of the control unit, each push button with signal light means being connected through an electronic driving circuit means to a backplane bus for providing necessary interfacing to the backplane bus, and connected to address decoding means for selecting one of the push buttons with signal light means of the control element and/or the control element if there is provided more than one control element;

(b) at least one processing unit mounted on a plug-in board of the same size as the plug-in board of the control element, the processing unit comprising a microprocessor (P), memory circuits (RAM, EPROM) having a program stored therein and being connected to the microprocessor (P) and interface means connecting the microprocessor (P) and memory circuits (RAM, EPROM) to and from the backplane bus, the microprocessor (P) and the memory circuits (RAM, EPROM) being connectable to a programming device for programming the processing unit and for providing a hard copy of the program stored in the processing unit,

(c) a plug-in board frame equipped with a backplane connector bus and mechanical aids for plugging in the one or more control elements and the one or more processing units respectively, in such a way that the control elements and the processing units after being plugged into the frame are electrically connected in parallel without requiring additional wiring,

(d) the function of the push-buttons and the signal light means being determined by the programming of the microporcessor and being, for example, momentary contact, permanent contact, mutual interlock of several push buttons, steady signal, or blinking signal.

4,454,597

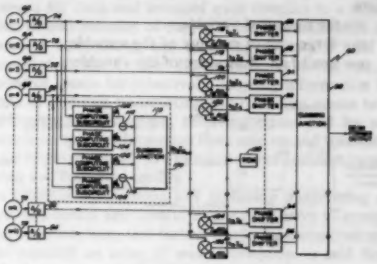
CONFORMAL ARRAY COMPENSATING BEAMFORMER

Edmund J. Sullivan, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1982, Ser. No. 374,207

Int. Cl.³ G01S *3/82*

U.S. Cl. 367—12 8 Claims



1. A conformal array compensating beamformer comprising:

a plurality of sensing elements, arranged in a non-planar configuration and adapted to receive incoming acoustic signals, for transforming said incoming acoustic signals into a plurality of proportional electrical analog signals;

a plurality of converting means for receiving said plurality of proportional electrical analog signals from said corresponding plurality of sensing elements and converting said plurality of proportional electrical signals into a plurality of digital signals;

phase computing means for receiving said digital signals from a preselected, at least three of said plurality of converting means, computing therewith the phase angles of the digital signals from each said preselected converting means and adding said phase angles in such a way as to produce phase shift factor $2k_2Z_2$;

a plurality of multiplier means, corresponding to said plurality of converting means, for multiplying said $2k_2Z_2$ phase factor from said phase computing means with a corresponding $Z_k/2Z_2$ scale factor selected from a plurality of $Z_k/2Z_2$ scale factors stored in ROM for values of k from 1 to N whereby a corresponding plurality of k_2Z_k phase shifts are produced as the output of said multiplier means;

a plurality of phase shifting means for receiving said plurality of k_2Z_k phase shifts from said corresponding plurality of multiplier means and said plurality of digital signals from said corresponding plurality of converting means, and shifting the phase of said plurality of digital signals by the amount of said corresponding plurality of phase shifts thereby producing a plurality of phase shifted digital signals as the output thereof; and

summing means for receiving said plurality of phase shifted digital signals from said plurality of phase shifting means and adding said plurality of phase shifted digital signals so as to form the projected planar array output of said beamformer.

4,454,598

DRILLING ORIENTATION TOOL

Jack R. Claycomb, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 113,560, Jan. 1, 1980, which is a continuation-in-part of Ser. No. 890,368, Mar. 17, 1978, Pat. No. 4,184,545. This application Aug. 5, 1982, Ser. No. 405,594

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—83 13 Claims

1. A method of transferring data from a tool having a measuring sensor with the tool connected in a drill string wherein mud flows along the drill string under urging of a mud pump

connected to the drill string wherein the method comprises the steps of:

(a) taking a measurement of a variable of interest with a downhole measuring sensor;

(b) converting the measurement into a measurement given by the relationship

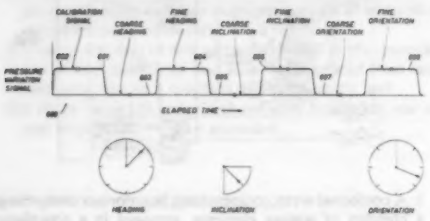
$$x = am + bn$$

where

x = the measured variable;

m = large unit of measure of the variable;

n = small unit of measure of the variable;



a = an integer between o and j;

b = an integer between o and k;

bn(b = k) = am (a = 1); and

am (a = j) is the maximum variable measurement;

(c) forming a restriction to mud flow in the drill string wherein the restriction alters mud pressure between higher and lower levels at the well head; and

(d) altering the restriction to encode the measured variable as time dependent functions of a and b wherein the functions a and b are separately encoded in sequence and separated by a pressure change between higher and lower pressures observed at the well head.

4,454,599

APPARATUS FOR REPRODUCING SIGNALS FROM A DISC

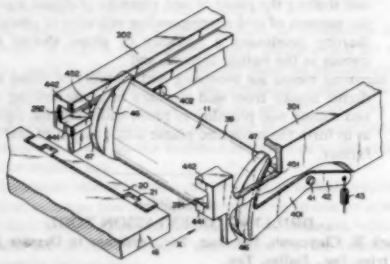
Yuzo Tsuchiya, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 28, 1981, Ser. No. 306,347

Claims priority, application Japan, Oct. 3, 1980, 55-137573; Jan. 30, 1981, 56-11055[U]; May 9, 1981, 56-69828

Int. Cl.³ G11B *17/04*

U.S. Cl. 369—77.2 **20 Claims**



1. An apparatus for reproducing signals from a disc, in which said disc stored in a casing is inserted and which comprises:

a housing having on one side an inlet through which said casing is inserted;

a cover movable between a first position where it closes the inlet of said housing and a second position where it opens the inlet;

a locking mechanism for preventing said cover from moving to the second position when signals are reproduced from said disc and for moving said cover to the second position when signals are not reproduced from said disc;

a turntable which is disposed within said housing and on which said disc is mounted, said turntable being arranged so as to be vertically movable between a third position, the level of which is lower than that of said inlet and a fourth position, the level of which is higher than that of said inlet;

a moving mechanism for maintaining said turntable at either the third or fourth position in the nonreproducing mode or in the reproducing mode,

wherein said locking mechanism includes

a locking member, engageable with said cover, which locking member is located at a fifth position not to engage with said cover in response to the movement of said turntable to the third position whereby said cover is movable to the second position, and which is located at a sixth position to engage with said cover in response to the movement of said cover to the fourth position whereby said cover is prevented from moving to the second position, and

a slider having an inclined surface engaged with said turntable, said slider being reciprocally movable,

and wherein said turntable vertically moves in response to the reciprocal movement of said slider;

said locking mechanism having connecting means for connecting said locking member and said slider;

said slider lifting said turntable from the third position to the fourth position in one way movement and descends said turntable from the fourth position to the third position in the movement opposite to the one way movement, whereby said locking member is moved to the sixth position so as to engage with daid cover in response to the one way movement of said slider through said connecting means and is moved to the fifth position so as not to engage with said cover in response to the movement opposite to the one way movement of said slider through said connecting means.

4,454,600

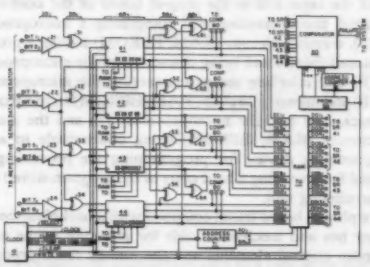
PARALLEL CYCLIC REDUNDANCY CHECKING CIRCUIT

Barry P. LeGresley, Port Moody, Canada, assignor to AEL Microtel Limited, Burnaby, Canada

Filed Aug. 25, 1982, Ser. No. 411,203

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—25 **12 Claims**



1. A cyclic redundancy checking circuit for use in a data verification system including a data generator operated to provide a plurality of repetitive series of groups of parallel data bits, normally having predetermined values, and a signal generator operated to periodically provide load and write signals both associated with each group of parallel data bits and further operates to periodically provide comparator enable and read signals, both associated with each series of groups of

parallel data bits, said cyclic redundancy checking circuit comprising:

first coding means connected to said data generator, operable to provide a first coded signal associated with each group of parallel data bits;

first-in-first-out storage means of predetermined capacity connected to said signal generator and said first coding means, said storage means capable of being initialized in response to said load signal, and operative to store a predetermined number of said first coded signals and further operative to provide a storage signal associated with each stored first coded signal;

second coding means connected to said storage means, operative in response to said storage signal to provide a second coded signal;

said first coding means further connected to said second coding means, operative in response to each group of parallel data bits and said second coded signal to provide said first coded signal;

first memory means, connected to said storage means and said signal generator, operative in response to said write signal to store said storage signal, further operative in response to said load signal to read out said storage signal;

said storage means operative in response to said load signal to store said displayed storage signal, whereby said storage means is initialized;

second memory means connected to said signal generator, storing a plurality of predetermined memory signals, operative in response to each read signal to readout a predetermined memory signal; and

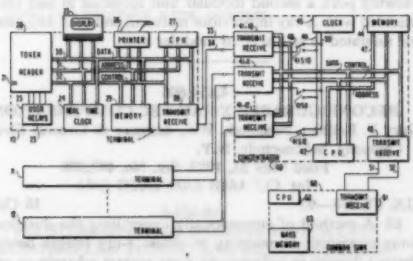
comparison means connected to said storage means, said signal generator and said second memory means, operative in response to said comparator enable signal to compare said memory signal to said storage signal, whereby a failure in said repetitive series of groups of parallel data bits is detected.

4,454,601

METHOD AND APPARATUS FOR COMMUNICATION OF INFORMATION AND ERROR CHECKING

Walter J. Helms, and James R. Geisler, both of Cincinnati, Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Feb. 11, 1982, Ser. No. 348,524
Int. Cl.³ H04L *1/14*; G06F *11/08*
U.S. Cl. 371—34 **14 Claims**



1. An information reporting system comprising:

a plurality of information accepting terminals,

a concentrator,

a plurality of duplex communication links, each connected between a different one of said terminals and said concentrator,

a common information sink comprising a digital signal processor and a further duplex communication link connecting said concentrator and said sink,

each of said terminals including:

transmitting/receiving means coupled to one of said duplex communication links for transmitting, when stimulated, information accepted by said terminal in the form of plural multi-bit words and for, at other times, receiving a multi-bit word, control means to stimulate said transmitting means to transmit a single word and then to transmit a single additional word, upon receipt, at said terminal, of an echo of said single transmitted word, until all words are transmitted,

said concentrator including a first transmitting and receiving means for each said terminal each coupled to a different one of said plurality of duplex communication links and a second transmitting and receiving means for said sink coupled to said further duplex communication link, and control means for selectively coupling information from one of said first transmitting and receiving means to said second transmitting and receiving means and for selectively coupling information from said second transmitting and receiving means to a selected one of said first transmitting and receiving means,

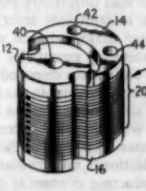
said common information sink including transmitting a receiving means and control means responsive to receipt of information from said further duplex communication link to transmit an echo of said information to said further duplex communication link.

4,454,602

CONDUCTIVELY COOLED LASER DIODE ARRAY

Robert J. Smith, Rochester, N.Y., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 26, 1982, Ser. No. 362,086
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—36 **6 Claims**



1. A conductively cooled laser diode stacked array comprising:

a plurality of alternating first and second plate assemblies wherein the first plate assembly of a predetermined outline comprises a laser diode assembly having mounted therein a laser diode with its output facet directed outwardly relative to the centerline of the stacked array, the diode being mounted between two conductive plates, the first plate assembly further comprising a first spacer plate which completes the predetermined outline of the first plate assembly, and wherein the second plate assembly also having the predetermined outline comprises an electrical contact spacer disposed adjacent to the laser diode assembly in the first plate assembly and a heat extractor electrically insulated from the contact spacer and from the conductive plates of the laser diode assembly, such that the electrical contact spacer and the heat extractor complete the predetermined outline of the second plate assembly, and such that the plurality of the laser diodes are oriented directly above and below one another in a line parallel to the centerline of the array;

first and second end plates in thermal communication with the first and second plate assemblies; external heat sink means to which at least one element of the group consisting of the first and second end plates is attached such that the heat generated within attacked array may be conducted thereto;

means to supply electricity to the plurality of laser diodes in the array; and

means to retain the stacked array in a unitary structure.

4,454,603

SEMICONDUCTOR LASER

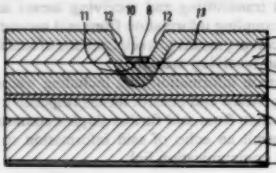
Peter Marschall, Neu-Ulm; Ewald Schlosser, Senden, and Claus Wölk, Erbach, all of Fed. Rep. of Germany, assignors to LICENTIA Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 26, 1982, Ser. No. 343,013

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102875

Int. Cl.³ H01S 3/18

U.S. Cl. 372—46 20 Claims



1. In a semiconductor laser composed of a sequence of semiconductor layers forming a heterostructure diode including a substantially homogeneously doped layer defining a laser active zone having a laser radiation exit face perpendicular to the layers, two respectively differently doped semiconductor layers disposed at respectively opposite sides of said active zone, a monocrystalline outer layer which, in the layer sequence, is spaced from one of said differently doped semiconductor layers by an additional intermediate layer, a trough-shaped recess formed in the outer major surface of said monocrystalline outer layer and extending essentially perpendicularly to said radiation exit face, and means disposed adjacent said recess for constricting the current flowing in the forward direction of the diode to a narrow, strip-shaped region in said laser active zone; the improvement wherein: said recess extends through said monocrystalline outer layer so that the bottom of the recess is formed by said additional intermediate semiconductor layer; an electrically conductive contact is disposed on at least said bottom of said recess; said additional intermediate layer is formed of GaAs which at least at the location of said contact is of p+ type conductivity; and said contact is selected from the group consisting of a Ti-Pt-Au contact, a Zn-Au contact and a Cr-Au contact.

4,454,604

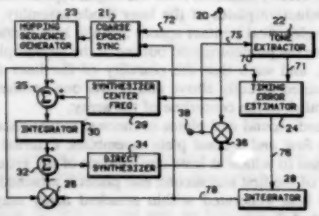
VIRTUAL TIME BASE DIRECT SYNCHRONIZER AND METHOD THEREFOR

Michael H. Myers, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 2, 1982, Ser. No. 364,704

Int. Cl.³ H04B 15/00; H04L 25/36

U.S. Cl. 375—1 11 Claims



1. A virtual time base direct synchronizer for use in aligning a hopped carrier signal, hopped by a hopping sequence signal, with a continuous phase frequency hopped signal comprising:

means for generating a signal indicative of an estimated phase error in the hopped carrier signal in the form of a part of a scaled first derivative of the phase of the hopped carrier signal, and

combining means coupled to said means for generating a signal indicative of an estimated phase error and further coupled to receive the hopped carrier signal for removing the estimated phase error from the hopped carrier and providing the result at an output thereof.

4,454,605

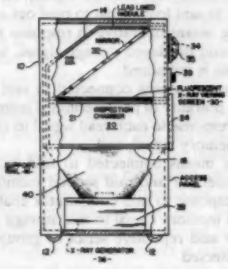
MODULAR X-RAY INSPECTION APPARATUS

Victor E. DeLucia, 11846 Mississippi Ave., Los Angeles, Calif. 90025

Filed Jan. 25, 1982, Ser. No. 342,610

Int. Cl.³ G01N 23/00

U.S. Cl. 378—57 5 Claims



1. X-ray apparatus for the inspection of parcels, mail, baggage, and the like, comprising: a cabinet formed of material transparent to X-rays; a first modular unit mounted in said cabinet shielded with X-ray impervious material and containing an inspection chamber and a further chamber adjacent to said inspection chamber; a door for the inspection chamber mounted on said first modular unit and shielded with X-ray impervious material; a viewing port for the further chamber mounted on said first modular unit; an X-ray viewing screen mounted in said further chamber and observable through said viewing port; a second modular unit mounted in said cabinet shielded with X-ray impervious material; and an X-ray generator mounted in said second modular unit.

4,454,606

RECONFIGURABLE X-RAY AEC COMPENSATION

Gary F. Relihan, Nashotah, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1983, Ser. No. 497,098

Int. Cl.³ A61B 6/00; H05G 1/44

U.S. Cl. 378—97 10 Claims

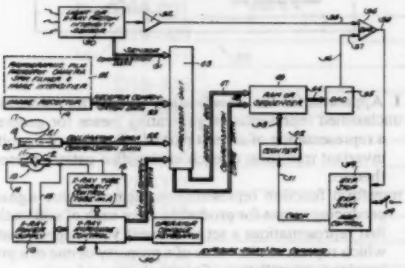
10. A method of automatically controlling the duration of x-ray exposures of anatomy to obtain x-ray images having a desired density in a diagnostic x-ray system wherein an exposure is terminated by deactivating an x-ray tube in response to a comparison being made with a comparator between an integrated signal that increases in magnitude with time in proportion to x-ray dose emergent from the anatomy and reference signal defining a compensation curve that changes in amplitude with time, the method comprising the steps of:

storing a plurality of data sets defining the coordinates of a relatively small number of points on a plurality of basic compensation curves representing reference signal magnitudes versus increments of x-ray exposure time corresponding to integrated signal magnitudes at which said

comparison is made and an exposure is to be terminated for obtaining said desired image density, each of the data sets defining said curves relating to a kilovoltage (kV) or a limited range of kVs and a current (mA) or a limited range of mAs applied to said x-ray tube,

developing gain factors representative of any one or all of the type or operating characteristic of the radiation sensor, image receptor, film and intensifying screen combinations and chosen density that will be in effect during making the x-ray exposure at a user selected kV and mA,

multiplying the respective basic compensation curve signal magnitudes by said gain factors and processing the signals with an algorithm that results in additional coordinate points equally spaced from each other in respect to time being determined between said relatively small number of



points to thereby produce the coordinates for reference signals versus relatively smaller increments of exposure time representing a modified compensation curve,

storing said reference signals in a memory device at addresses corresponding to the exposure times to which they relate before said exposure is initiated and concurrently with initiating the exposure addressing said reference signals at a rate that results in supplying them from said memory device to said comparator at the time to which they relate, and

simultaneously supplying said integrator signal representing increasing integrated x-ray dose relative to time to said comparator for said comparator to produce a signal that is effective to terminate said exposure when the reference signal and integrator signal compare.

4,454,607

FM STEREOPHONIC RECEIVER WITH CPU CONTROLLED TUNING AND DEMODULATING

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 31, 1981, Ser. No. 298,008

Claims priority, application Japan, Sep. 22, 1980, 55-132152

Int. Cl.³ H04H *5/00*

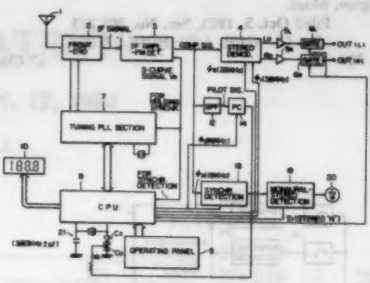
U.S. Cl. 381—7 **12 Claims**

12. An FM stereophonic receiver comprising:

a tuning section;

a multiplex demodulator controlled by sub-carrier signals, said demodulator receiving a composite signal including a pilot signal;

a clock controlled central processor for controlling the tuning of the tuning section and for generating the sub-carrier signals; and



phase control means for varying the frequency of the clock signal to the central processor to cause the sub-carrier signals to be synchronized with the pilot signal.

4,454,608

AUDIO RESPONSE APPARATUS

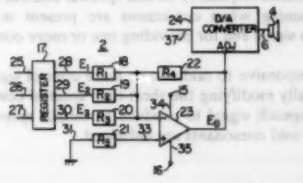
Kazuhiko Maeba, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,885

Claims priority, application Japan, Oct. 17, 1980, 55-146405; Mar. 25, 1981, 56-42326; Mar. 25, 1981, 56-42327

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—51 **5 Claims**



1. An audio response apparatus for producing analog audio signals, comprising:

(a) a memory for storing therein digital audio parameters which are to be read out during the production of the analog audio signals;

(b) a controller for setting at least address information of said memory and sound volume control information;

(c) a speech synthesizer for synthesizing digital audio signals from the audio parameters read out from said memory in accordance with the address information designated by said controller;

(d) a digital-to-analog converter for converting said digital audio signals from said speech synthesizer into analog signals as a function of a variable reference voltage, said variable reference voltage controlling the conversion of said digital signals to analog signals including the level of the analog signal in the digital-to-analog converter;

(e) a register for temporarily loading the sound volume control information derived from said controller; and

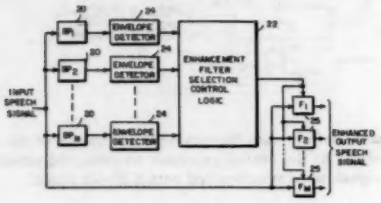
(f) control means for varying the reference voltage supplied to said digital-to-analog converter in a plurality of steps on the basis of the sound volume control information from said register to control the digital to analog conversion of the audio signal and the level of the audio signal.

4,454,609

SPEECH INTELLIGIBILITY ENHANCEMENT

James M. Kates, Andover, Mass., assignor to Signatron, Inc., Lexington, Mass.

Filed Oct. 5, 1981, Ser. No. 308,273
Int. Cl.³ G10L 1/00; H04R 29/00
U.S. Cl. 381—68 27 Claims



1. A system for processing an input speech signal comprising means responsive to said input speech signal for estimating the short-time spectral content of said input speech signal as a function of frequency relative to the short-time spectral content at a specified frequency or frequency region of said input speech signal:

control means responsive to said spectral content estimate for determining when consonants are present in said input speech signal and for providing one or more control signals; and

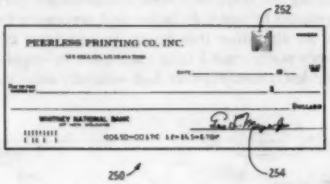
means responsive to said one or more control signals for dynamically modifying the short-time spectral content of said input speech signal to produce an output speech signal in which said consonants are enhanced.

4,454,610

METHODS AND APPARATUS FOR THE AUTOMATIC CLASSIFICATION OF PATTERNS

George C. Sziklai, Los Altos Hills, Calif., assignor to Transaction Sciences Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 907,836, May 19, 1978, which is a continuation of Ser. No. 118,453, Feb. 4, 1980, abandoned. This application Jan. 6, 1982, Ser. No. 337,393
Int. Cl.³ G06K 9/00
U.S. Cl. 382—3 13 Claims



1. Apparatus for the classification of patterns, comprising:

unclassified representation generating means for generating a representation of at least part of a function of a position-invariant transform of each unclassified pattern presented thereto;

transform function representation element value signal set producing means for producing from each of said unclassified representations a set of element value signals each of which represents the value of a property of one of a predetermined constellation of elements thereof; and

correlating means for correlating each set of said transform function representation element value signals with at least one set of reference signals;

said elements of said unclassified representations being selected in accordance with a statistical property of a plurality of reference representations each of which represents at least part of said function of said position-invariant transform of a reference pattern, and each one of said plurality of reference patterns being a member of a subset of said plurality of reference patterns all of the members of which are cosignificative and also being a member of a subset of said plurality of reference patterns all of the members of which are co-original.

DESIGN PATENTS

GRANTED JUN. 12, 1984

ERRATA

For CLASS	See PATENT NO.
D19–001	274,239
D19–001	274,240
D19–020	274,241
D19–077	274,242
D16–130	274,277
D20–040	274,278
D21–088	274,279
D21–107	274,280
D21–121	274,281
D21–188	274,282
D21–197	274,283
D21–225	274,284
D21–246	274,285
D21–246	274,286
D22–001	274,287
D23–049	274,288

DESIGN PATENTS

GRANTED JUN. 12, 1984

274,194

WEIGHT RETAINING ATHLETIC VEST OR THE LIKE

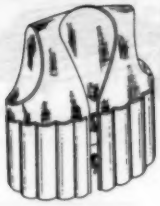
Alfred R. J. Rutty, 40 Liberty Parade Ivanhoe,, Victoria, Australia

Filed Aug. 24, 1981, Ser. No. 295,288

Claims priority, application Australia, Mar. 19, 1981, 83643

Term of patent 14 years

U.S. Cl. D2—184



274,195

COMBINED EMBROIDERY NEEDLE HOLDER AND NEEDLE OR SIMILAR ARTICLE

Walter F. Strauss, 1465 4th St., Berkeley, Calif. 94710

Filed Dec. 21, 1981, Ser. No. 332,613

Term of patent 14 years

U.S. Cl. D3—28

274,196

BRUSH

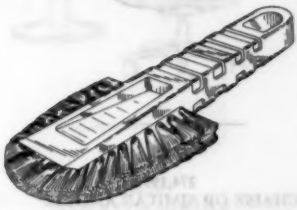
Robin V. Colemore-Williams, Auckland, New Zealand, assignor to Merryware Industries, Ltd., Auckland, New Zealand

Filed Apr. 24, 1981, Ser. No. 257,504

Claims priority, application New Zealand, Mar. 26, 1980, 16480

Term of patent 14 years

U.S. Cl. D4—12



274,197

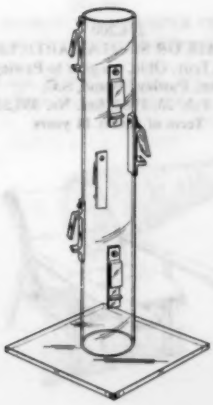
STAND FOR HANGING POTTED PLANTS

Robert E. Olson, P.O. Box 17095, San Antonio, Tex. 78217

Filed Apr. 12, 1982, Ser. No. 367,156

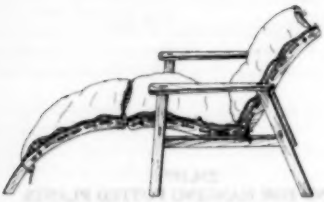
Term of patent 14 years

U.S. Cl. D6—28



274,198
PEDESTAL BASED ARM CHAIR WITH CLOSED ARM
Robert A. Keeler, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 328,459, Dec. 7, 1981. This application Jun. 1, 1982, Ser. No. 383,565
The portion of the term of this patent subsequent to May 22, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—31

274,199
CHAISE OR SIMILAR ARTICLE
Herbert C. Saiger, Troy, Ohio, assignor to Pawleys Island Hammock Corporation, Pawleys Island, S.C.
Filed Feb. 23, 1982, Ser. No. 351,552
Term of patent 14 years
U.S. Cl. D6—37

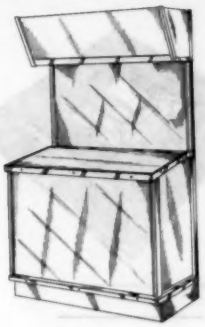


274,200
CHAIR OR SIMILAR ARTICLE
Herbert C. Saiger, Troy, Ohio, assignor to Pawleys Island Hammock Corporation, Pawleys Island, S.C.
Filed Feb. 23, 1982, Ser. No. 351,551
Term of patent 14 years
U.S. Cl. D6—73

274,201
BATH ACCESSORY
Willard Aaron, 616 Skokie La. South, Glencoe, Ill. 60022
Filed Sep. 30, 1982, Ser. No. 430,272
Term of patent 14 years
U.S. Cl. D6—86

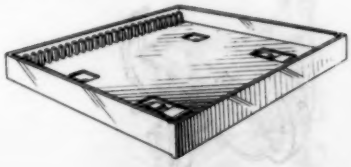
274,202
PLANT HANGER
Alexander D. Karapita, 38 Robinter Dr., Willowdale, Ontario, Canada M2M 3R2
Filed Mar. 16, 1982, Ser. No. 358,693
Claims priority, application Canada, Oct. 1, 1981, 01-10-81-19
Term of patent 14 years
U.S. Cl. D6—28

274,203
MERCHANDISE DISPLAY STAND
Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco, Inc., Gnadenhutten, Ohio
Filed Feb. 22, 1982, Ser. No. 351,144
Term of patent 14 years
U.S. Cl. D6—173



274,204
ARM REST FOR A BUSINESS CHAIR
Jerome Caruso, Lake Forest, Ill., assignor to Litton Business Systems, Inc., York, Pa.
Division of Ser. No. 142,259, Apr. 21, 1980. This application Sep. 2, 1982, Ser. No. 414,406
Term of patent 14 years
U.S. Cl. D6—194

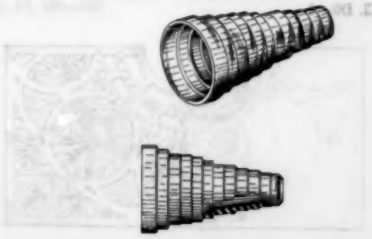
274,205
DISPLAY TRAY
Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Feb. 22, 1982, Ser. No. 351,086
Term of patent 14 years
U.S. Cl. D6—199



274,206
GOBLET
Kathleen West, 6779 Worsham Dr., Whittier, Calif. 90602, and Sheryll Simpkins, 1605 Oak Grove, San Marino, Calif. 91108
Filed Jan. 18, 1982, Ser. No. 340,303
Term of patent 14 years
U.S. Cl. D7—13

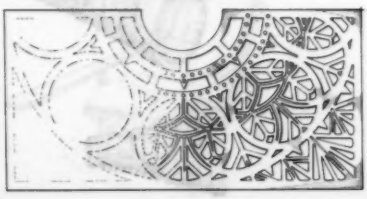
274,207
CORN COB HOLDER
Arlene R. Lenaghan, 1099 N. Cranbrook, Birmingham, Mich. 48009
Filed Apr. 5, 1982, Ser. No. 365,875
Term of patent 14 years
U.S. Cl. D7—42

274,208
BOTTLE-TO-BOTTLE TRANSFER FUNNEL
John L. Hildenbrand, 1200 Leader Building, Cleveland, Ohio 44114
Filed Apr. 29, 1982, Ser. No. 373,269
Term of patent 14 years
U.S. Cl. D7—68

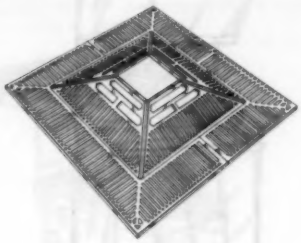


274,209
VACUUM BOTTLE
Yoshito Kikuchi, Osaka, Japan, assignor to Tiger Vacuum Bottle Ind. Co., Ltd., Osaka, Japan
Filed Apr. 7, 1982, Ser. No. 366,129
Claims priority, application Japan, Nov. 12, 1981, 56-50471
Term of patent 14 years
U.S. Cl. D7—77

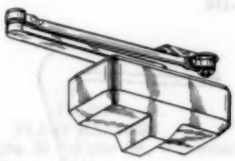
274,210
TREE DRAIN OR SIMILAR ARTICLE
Robert E. Haggard, Snohomish County, Wash., assignor to Merry Haggard, Snohomish, Wash.
Filed Jan. 15, 1982, Ser. No. 339,596
Term of patent 14 years
U.S. Cl. D8—1



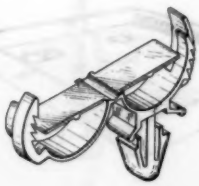
274,211
TREE GRATE
Robert E. Haggard, Snohomish County, Wash., assignor to Merry Haggard, Snohomish, Wash.
Filed Jan. 29, 1982, Ser. No. 344,248
Term of patent 14 years
U.S. Cl. D8—1



274,212
DOOR CLOSER
Takeshi Shobuji, Chiba, Japan, assignor to Ryobi Ltd., Fuchu, Japan
Filed Sep. 30, 1982, Ser. No. 430,302
Claims priority, application Japan, Jul. 5, 1982, 57-30407
Term of patent 14 years
U.S. Cl. D8—330



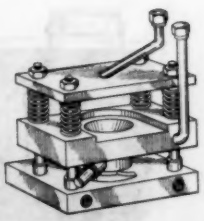
274,213
CLAMP FOR WIRES AND OTHER ELONGATED BODIES OR THE LIKE
Nobuaki Omata, Hiroshima, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Mar. 12, 1981, Ser. No. 243,006
Claims priority, application Japan, Aug. 13, 1980, 32854/80
Term of patent 14 years
U.S. Cl. D8—356



274,214
FIXTURE HANGER
Hendrik A. J. de Vos, Swansea, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Feb. 22, 1982, Ser. No. 350,847
Term of patent 14 years
U.S. Cl. D8—373

274,215
CASTER
John W. Caldwell, 1829 Warwick Rd., San Marino, Calif. 91108
Filed May 11, 1981, Ser. No. 262,624
Term of patent 14 years
U.S. Cl. D8—375

274,216
FILTER CLAMP FOR PIPES AND THE LIKE
Glen B. Carlson, Sandy, Utah, assignor to Kaman Sciences Corporation, Colorado Springs, Colo.
Filed Oct. 16, 1981, Ser. No. 312,312
Term of patent 14 years
U.S. Cl. D8—394



274,217
CONTAINER FOR LIQUIDS OR THE LIKE
Shinichiro Aramaki, Tokorozawa, Japan, assignor to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan
Filed Sep. 26, 1977, Ser. No. 836,898
Term of patent 14 years
U.S. Cl. D9—349

274,218
CONTAINER FOR LIQUIDS OR THE LIKE
Shinichiro Aramaki, Tokorozawa, Japan, assignor to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan
Filed Sep. 26, 1977, Ser. No. 836,899
Term of patent 14 years
U.S. Cl. D9—355

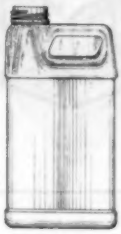
274,219
COMBINED DOLL AND CONTAINER OR SIMILAR ARTICLE
Robert Fieldhouse, 3636 Breezemont Dr., Sarasota, Fla. 33582
Filed Mar. 4, 1981, Ser. No. 240,297
Term of patent 14 years
U.S. Cl. D9—316

274,220
PLASTIC BOTTLE
Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Boyertown, Pa.
Filed Jun. 5, 1981, Ser. No. 270,767
Term of patent 14 years
U.S. Cl. D9—352

274,221
PLASTIC BOTTLE
Frederick N. Biesecker, Boyertown, Pa., assignor to Drug Plastics & Glass Company, Boyertown, Pa.
Continuation-in-part of Ser. No. 282,350, Jul. 9, 1981, abandoned. This application Jan. 15, 1982, Ser. No. 339,814
Term of patent 14 years
U.S. Cl. D9—352

274,222
BOTTLE
Beverly L. Markis, Mendota Heights, Minn., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 25, 1982, Ser. No. 361,960
Term of patent 14 years
U.S. Cl. D9—352

274,223
JUG
Guy A. Turnbull, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 2, 1981, Ser. No. 317,096
Term of patent 14 years
U.S. Cl. D9—376

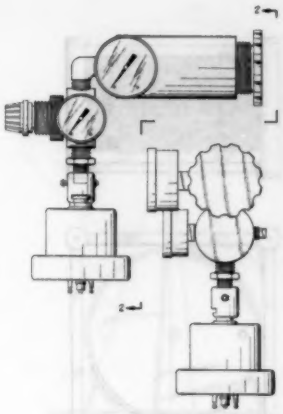


274,224
PACKAGING CUP OR THE LIKE
William N. Weaver, Northbrook, and Leslie S. Marco, Bloomingdale, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 14, 1981, Ser. No. 311,125
Term of patent 14 years
U.S. Cl. D9—390

274,225
LIGHT BEAM CLOCK
Jerome H. Simon, 17 Hubbard Ave., Cambridge, Mass. 02140
Filed Sep. 21, 1981, Ser. No. 304,318
Term of patent 14 years
U.S. Cl. D10—23

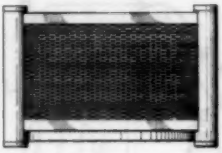
274,226
ATTITUDE DIRECTOR INDICATOR
Donald F. Schmidt, Cedar Rapids, Iowa, and Siegfried Knemeyer, deceased, late of Yellow Springs, Ohio (by Doris R. Knemeyer, commissioner), assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 27, 1982, Ser. No. 343,071
Term of patent 14 years
U.S. Cl. D10—74

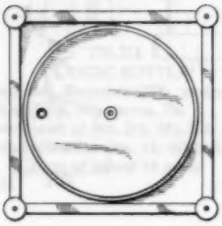
274,227
HYDRAULIC FILTER PRESS FOR PRESSING LIQUID FROM A DRILLING MUD OR THE LIKE
David E. Cain, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Mar. 9, 1981, Ser. No. 242,124
Term of patent 14 years
U.S. Cl. D10—83



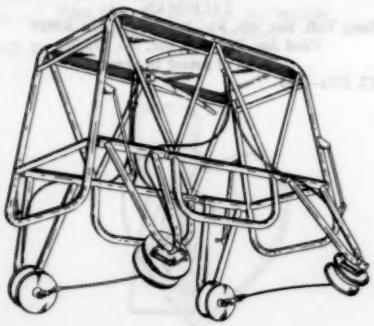
274,228
TALISMAN
Houshang Vafi, Box 669, Rte. 1, Glencoe, Mo. 63038
Filed Jun. 22, 1981, Ser. No. 275,925
Term of patent 14 years
U.S. Cl. D11—103

274,229
BOX FOR PLANTS, FLOWERS OR THE LIKE
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex S.A.R.L., Oyonnax, France
Filed Nov. 9, 1981, Ser. No. 319,287
Claims priority, application France, May 7, 1981, 811677
Term of patent 14 years
U.S. Cl. D11—155





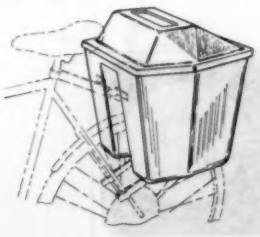
274,230
CABLE SUPPORTED PERSONNEL CARRIER
Terence Kelly, Birmingham, England, assignor to TI Reynolds Limited, Birmingham, England
Filed Jan. 22, 1982, Ser. No. 341,796
Claims priority, application United Kingdom, Jul. 23, 1981, 1001633
Term of patent 14 years
U.S. Cl. D12—37



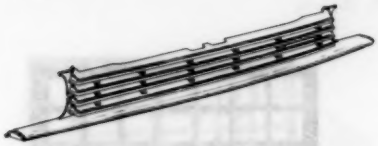
274,231
SCOOTER
Tsunemi Kawashima, Tokyo; Toshiharu Shimizu, Saitama, and Kiyoshi Hashimoto, Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Dec. 14, 1982, Ser. No. 449,774
Claims priority, application Japan, Jun. 17, 1982, 57-27098
Term of patent 14 years
U.S. Cl. D12—110

274,232
VEHICLE TIRE
Mitsuji Kohno, and Osamu Inoue, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Nov. 25, 1981, Ser. No. 324,921
Claims priority, application Japan, May 29, 1981, 56-22941
Term of patent 14 years
U.S. Cl. D12—146

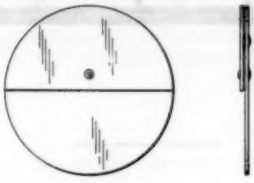
274,233
CARRIER FOR A BICYCLE
John P. Kusz, 5536 N. Monitor, Chicago, Ill. 60630
Filed Jan. 16, 1981, Ser. No. 225,707
Term of patent 14 years
U.S. Cl. D12—158



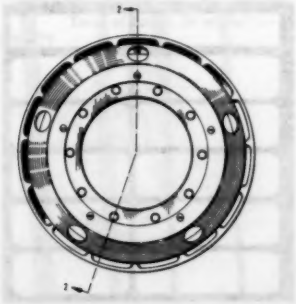
274,234
AUTOMOBILE GRILL
Haruki Koyanagi, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokahama, Japan
Filed Sep. 30, 1982, Ser. No. 430,112
Term of patent 14 years
U.S. Cl. D12—163



274,235
SUN SHADE
Bernard J. Fitzpatrick, 3211 Garner, Kansas City, Mo. 64124
Filed Feb. 2, 1982, Ser. No. 345,071
Term of patent 14 years
U.S. Cl. D12—191

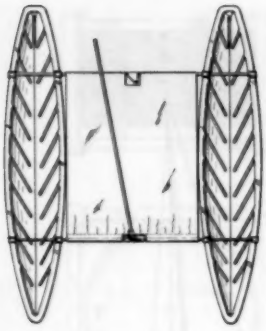


274,236
WHEEL
Richard R. Woodward, Yalding, England, assignor to GKN Kent Alloys Limited, Rochester, England
Filed Sep. 8, 1981, Ser. No. 300,174
Claims priority, application United Kingdom, Jul. 10, 1981, 1001400
Term of patent 14 years
U.S. Cl. D12—209

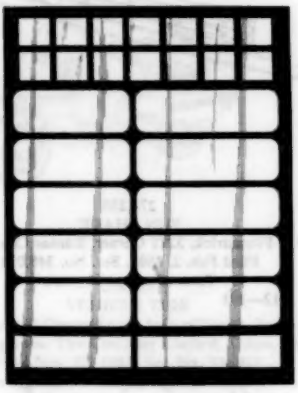


274,237
CATAMARAN
Stephen A. Edmonds, 3319 C Gardens East Dr., Palm Beach Gardens, Fla. 33410, and William C. Roberts, Jr., 1442 39th St., West Palm Beach, Fla. 33407
Filed Feb. 22, 1979, Ser. No. 14,246
Term of patent 14 years
U.S. Cl. D12—304

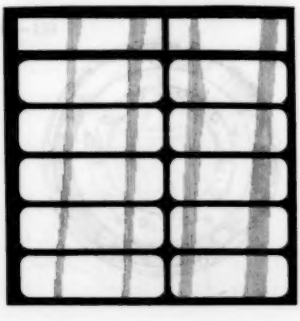
274,238
WATER CRAFT
Ellis Mellinger, Hermosa Beach, and Frank Alonso, North Hollywood, both of Calif., assignors to Llumar Star Kites, Pacoima, Calif.
Filed Feb. 16, 1982, Ser. No. 348,914
Term of patent 14 years
U.S. Cl. D12—304



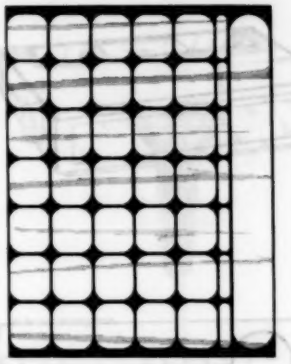
274,239
PERSONAL DIARY SHEET FOR THE VISUALLY HANDICAPPED OR THE LIKE
Lucien E. Donadio, 1 Beacon St., Vermont South, Victoria, Australia
Filed Feb. 19, 1981, Ser. No. 235,370
Claims priority, application Australia, Aug. 19, 1980, 81822
Term of patent 14 years
U.S. Cl. D19—1



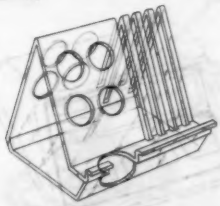
274,240
PERSONAL DIARY SHEET FOR THE VISUALLY HANDICAPPED OR THE LIKE
Lucien E. Donadio, 1 Beacon St., Vermont South, Victoria, Australia
Filed Feb. 19, 1981, Ser. No. 236,077
Claims priority, application Australia, Aug. 19, 1980, 81823
Term of patent 14 years
U.S. Cl. D19—1



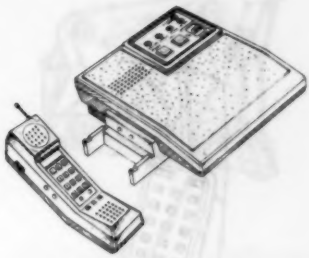
274,241
CALENDER SHEET FOR THE VISUALLY HANDICAPPED OR THE LIKE
Lucien E. Donadio, 1 Beacon St., Vermont South, Victoria, Australia
Filed Feb. 19, 1981, Ser. No. 235,373
Claims priority, application Australia, Aug. 19, 1980, 81825
Term of patent 14 years
U.S. Cl. D19—20



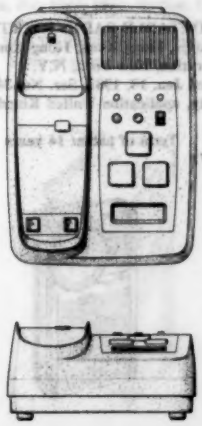
274,242
DRAFTING TOOL ORGANIZING DEVICE
Gordon D. Fineout, 2512 Delta River, Lansing, Mich. 48906
Filed Mar. 8, 1982, Ser. No. 356,198
Term of patent 14 years
U.S. Cl. D19—77



274,243
CORDLESS TELEPHONE SYSTEM
James Asaki, and William G. MacKenzie, both of Middletown, N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jul. 1, 1981, Ser. No. 279,292
Term of patent 14 years
U.S. Cl. D14—53

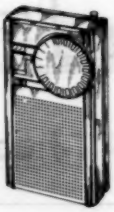


274,244
CORDLESS TELEPHONE TRANSMITTER UNIT OR SIMILAR ARTICLE
Kili Kim, 786 Miraflores Ave., San Pedro, Calif. 90731
Filed Oct. 19, 1981, Ser. No. 313,172
Term of patent 14 years
U.S. Cl. D14—58

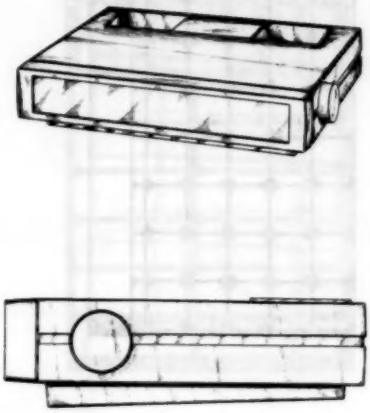


274,245
TELEPHONE HANDSET
John C. Coons, and Jean M. Beirise, both of Cincinnati, Ohio, assignors to Masco Corp. of Indiana, Taylor, Mich.
Filed May 1, 1981, Ser. No. 259,607
Term of patent 14 years
U.S. Cl. D14—64

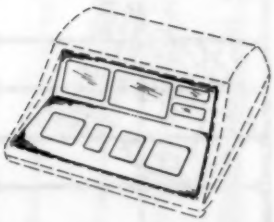
274,246
PORTABLE RADIO RECEIVER
Dieudonne G. Aoijs, Hong Kong, Hong Kong, assignor to U.S Philips Corporation, New York, N.Y.
Filed Jan. 18, 1982, Ser. No. 340,419
Claims priority, application United Kingdom, Jul. 22, 1981, 1001604
Term of patent 14 years
U.S. Cl. D14—71



274,247
COMBINED TELEPHONE STAND AND CLOCK RADIO OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa.; Arthur L. Stern, Jr., Noblesville, Ind., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 5, 1983, Ser. No. 455,873
Term of patent 14 years
U.S. Cl. D14—73



274,248
COMPUTER FACEPLATE
Donald P. De Vale, DeKalb County; Howard B. Wilbrandt, McHenry County; Dennis E. Tomlinson, and Leonard J. Kubacki, both of Kane County, all of Ill., assignors to Industrial Design Electronic Associates, Inc., Sycamore, Ill.
Filed Nov. 9, 1981, Ser. No. 319,230
Term of patent 14 years
U.S. Cl. D14—115



274,249

BAR CODE READER

Marlan Polhemus, Chicago, Ill., assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Dec. 28, 1981, Ser. No. 334,823

Term of patent 14 years

U.S. Cl. D14—116

274,250

ROTARY LAWN MOWER

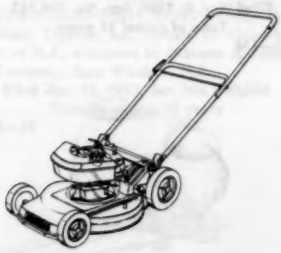
Philip R. Allen, and Terence F. Porter, both of Auckland, New Zealand, assignors to Mason & Porter Limited, Auckland, New Zealand

Filed Jul. 24, 1980, Ser. No. 171,993

Claims priority, application New Zealand, Apr. 16, 1980, 16509

Term of patent 14 years

U.S. Cl. D15—14



274,251

ATTACHMENT COUPLER FOR A LOADING MACHINE

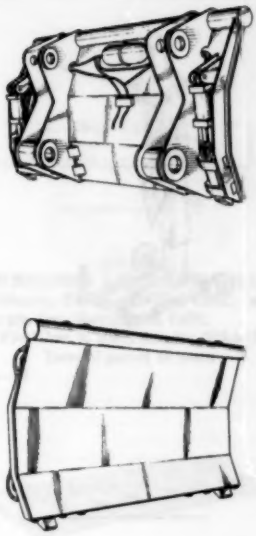
Borgar Hustveit, Topplsveien 23, 1352 Kolsås, Norway (1352)

Filed Nov. 26, 1982, Ser. No. 444,585

Claims priority, application Norway, May 21, 1982, 62 987

Term of patent 14 years

U.S. Cl. D15—32



274,252

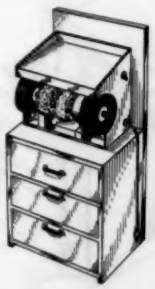
COMBINED POLISHING MACHINE AND CABINET

A. Douglas Roberts, Box 9942, Plaza Station, Greensboro, N.C. 27408

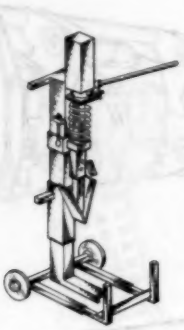
Filed Feb. 19, 1982, Ser. No. 350,370

Term of patent 14 years

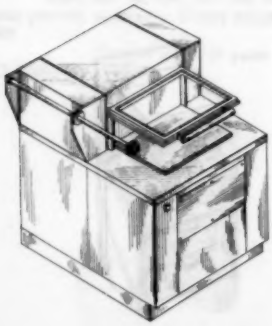
U.S. Cl. D15—124



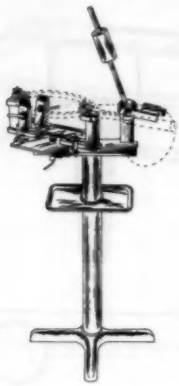
274,253
WOOD SPLITTER
Robert W. Harris, 6608 28th Ave. NW, Seattle, Wash. 98117, and William R. Weber, 4200 50th Ave. NE, Seattle, Wash. 98105
Filed May 19, 1981, Ser. No. 267,625
Term of patent 14 years
U.S. Cl. D15—127



274,254
VACUUM FORMING APPARATUS
Henry H. Jenkins, 864 W. Hacienda Dr., Corona, Calif. 91720
Filed Apr. 30, 1981, Ser. No. 259,012
Term of patent 14 years
U.S. Cl. D15—146



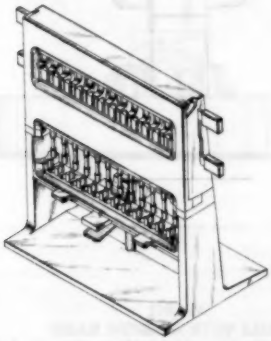
274,255
TENNIS STRINGING APPARATUS
Richard Janes, and Donald Chartier, both of Nashua, N.H., assignors to J.C. Mfg. Co., Nashua, N.H.
Filed Oct. 6, 1980, Ser. No. 194,216
The portion of the term of this patent subsequent to Nov. 12, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—199



274,256
END CAP FOR HEAT EXCHANGERS
David Lange, 3045 Retallack St., and Leland Lange, 58 Ryan Rd., both of Regina, Saskatchewan, Canada
Filed Nov. 5, 1980, Ser. No. 204,313
Term of patent 14 years
U.S. Cl. D23—136

274,257
PRECISION BORE FUSED SILICA TUBING WITH TAPERED SECTION
Rand G. Jenkins, Fair Oaks, and Norman W. Wohlers, Davis, both of Calif., assignors to J&W Scientific, Inc., Rancho Cordova, Calif.
Filed Apr. 24, 1981, Ser. No. 257,180
Term of patent 14 years
U.S. Cl. D24—99

274,258
FLUID LOADING DEVICE
Manfred Hegemann, South Nyack, N.Y., assignor to Electro-Nucleonics, Inc., Fairfield, N.J.
Continuation-in-part of Ser. No. 312,682, Oct. 19, 1981, abandoned.
This application Aug 4, 1982, Ser. No. 405,300
Term of patent 14 years
U.S. Cl. D24—8



274,259
DENTAL COMPOSITE UNIT DOSE TRAY
Leslie Hamilton, Trenton, and Robert D. Holewinski, Lakehurst, both of N.J., assignors to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Jan. 18, 1982, Ser. No. 340,564
Term of patent 14 years
U.S. Cl. D24—16

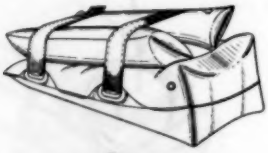
274,260
SPEECH THERAPY TONGUE VIEWER
Ida M. Wiedel, 7340 Charlotte, Kansas City, Mo. 64131
Filed Jan. 25, 1982, Ser. No. 342,156
Term of patent 14 years
U.S. Cl. D24—19

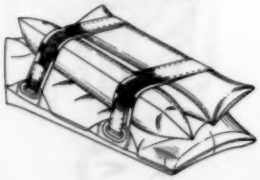
274,261
MICROSCOPE LABORATORY SLIDE
Donald W. Valencia, El Dorado Hills, Calif., assignor to Immuno Concepts, Inc., Sacramento, Calif.
Filed Jan. 9, 1981, Ser. No. 223,673
Term of patent 14 years
U.S. Cl. D24—29

274,262
IMPLANTABLE DEFIBRILLATOR PATCH ELECTRODE OR SIMILAR ARTICLE
Marlin S. Heilman, Gibsonia, and Alois A. Langer, Pittsburgh, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.
Division of Ser. No. 175,821, Aug. 5, 1980. This application Jan. 12, 1983, Ser. No. 457,356
Term of patent 14 years
U.S. Cl. D24—29

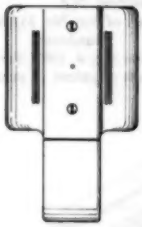
274,263
MEDICAL APPLIANCE FOR PERCUSSIVE RESPIRATORY THERAPY
Peter B. Duffy, 4639½ Tujunga, N. Hollywood, Calif. 91602
Filed Dec. 8, 1980, Ser. No. 214,341
Term of patent 14 years
U.S. Cl. D24—36

274,264
INFLATABLE SPLINT
Jan E. Andersson, Lutavägen 54, S-245 00 Staffanstorp, Sweden
Filed Oct. 19, 1981, Ser. No. 312,779
Claims priority, application Sweden, Apr. 23, 1981, 81-1020
Term of patent 14 years
U.S. Cl. D24—64





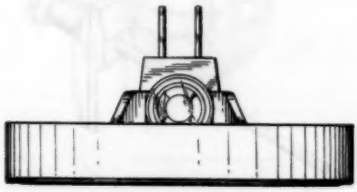
274,265
HEAT IRRADIATION DEVICE FOR MEDICAL PURPOSES
Fritz Gorbahn, Kieferaweg 12, D 5810 Witten, Fed. Rep. of Germany
Filed Sep. 29, 1981, Ser. No. 306,895
Term of patent 14 years
U.S. Cl. D24—68



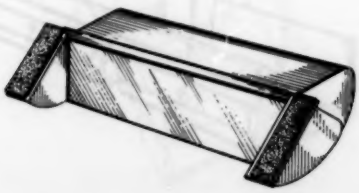
274,266
PICKET
George O. Leniag, 4535 Elm St., Chino, Calif. 91710
Filed Dec. 14, 1981, Ser. No. 330,197
Term of patent 14 years
U.S. Cl. D25—73

274,267
EXTRUDED SECTION
Michael J. Cushing, Sale, England, assignor to Rotalac Plastics Limited, Altrincham, England
Filed May 20, 1982, Ser. No. 380,261
Claims priority, application United Kingdom, Mar. 25, 1982, 82/1005820
Term of patent 14 years
U.S. Cl. D25—74

274,268
NIGHTLIGHT
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 7, 1982, Ser. No. 366,117
Term of patent 14 years
U.S. Cl. D26—26

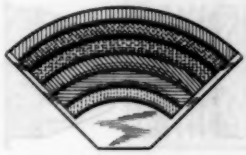


274,269
REAR WINDOW STOP LIGHT
Donald J. Shanklin, 1652 N. Mountain View Pl., Fullerton, Calif. 92631
Filed Aug. 12, 1982, Ser. No. 407,549
Term of patent 14 years
U.S. Cl. D26—28

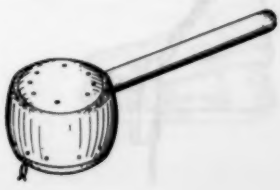


274,270
LAMP BASE
Anthony Pitti, 189 Suffolk Ave., Brentwood, N.Y. 11717
Filed Jul. 12, 1982, Ser. No. 397,040
Term of patent 14 years
U.S. Cl. D26—93

274,271
NIGHTLIGHT COVER
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 7, 1982, Ser. No. 366,277
Term of patent 14 years
U.S. Cl. D26—125

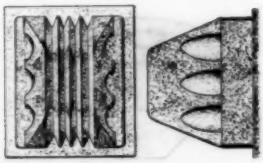


274,272
HAIR DRYING BONNET
Edward J. Doyle, Hatboro, Pa., assignor to Conair Corporation, Edison, N.J.
Filed Apr. 15, 1982, Ser. No. 368,580
Term of patent 14 years
U.S. Cl. D28—19



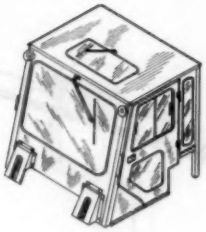
274,273
COMBINED GARBAGE DISPOSAL PLUNGER AND BRUSH
Fredrick F. Auerbach, 2660 E. Parleys Way, Salt Lake, Utah 84109
Continuation-in-part of Ser. No. 186,521, Sep. 12, 1980, Pat. No. Des. 269,302, and Ser. No. 186,522, Sep. 12, 1980, Pat. No. Des. 269,471. This application Jun. 23, 1982, Ser. No. 391,169
Term of patent 14 years
U.S. Cl. D32—35

274,274
DISPOSABLE OVEN CLEANER APPLICATOR
Joseph G. Banasiak, Sayreville, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Dec. 6, 1982, Ser. No. 446,931
Term of patent 14 years
U.S. Cl. D32—45

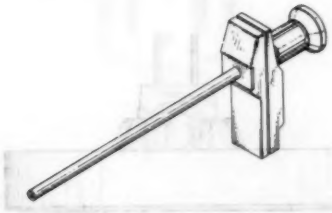


274,275
LIFT FOR RAISING AND LOWERING AN OBJECT
Palmer C. Alvermann, Rte. 1, Box 138, Clear Lake, Wis. 54005
Filed Jan. 18, 1982, Ser. No. 340,348
Term of patent 14 years
U.S. Cl. D34—33

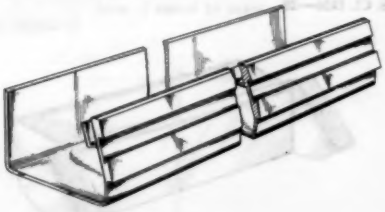
274,276
LIFT TRUCK CAB
Robert P. Martin, Jr., c/o Martin Sheet Metal, Inc., 7108 Madison Ave., Cleveland, Ohio 44102
Filed Sep. 18, 1981, Ser. No. 303,371
Term of patent 14 years
U.S. Cl. D34—37



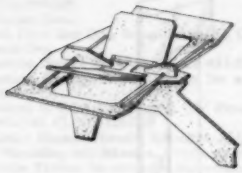
274,277
INSPECTION DEVICE
Russell Manoy, St. Albans, England, assignor to Keymed Limited, Essex, England
Filed Aug. 27, 1981, Ser. No. 297,042
Claims priority, application United Kingdom, Mar. 5, 1981, 999229
Term of patent 14 years
U.S. Cl. D16—130



274,278
DISPLAY CARD HOLDER
Frank V. Haymann, Johannesburg, and David A. King, Transvaal, both of South Africa, assignors to Sable Enterprises (Proprietary) Limited, Transvaal, South Africa
Filed Jun. 1, 1981, Ser. No. 269,064
Claims priority, application South Africa, Feb. 24, 1981, 81/0134
Term of patent 14 years
U.S. Cl. D20—40

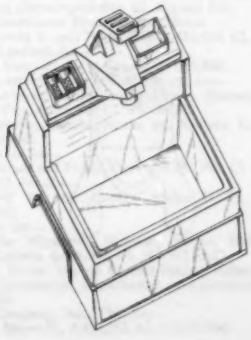


274,279
KITE
Charles O. Meckley, 29520 SW. 199th Ave., Homestead, Fla. 33030
Filed Feb. 23, 1982, Ser. No. 351,452
Term of patent 14 years
U.S. Cl. D21—88

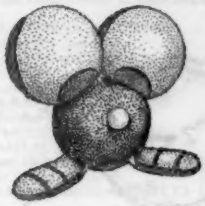


274,280
PUZZLE
Thomas Kremer, Widworthy Barton, Honiton, Devon, England
Filed Sep. 8, 1981, Ser. No. 300,266
Term of patent 14 years
U.S. Cl. D21—107

274,281
TOY SINK
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,184
Term of patent 14 years
U.S. Cl. D21—121



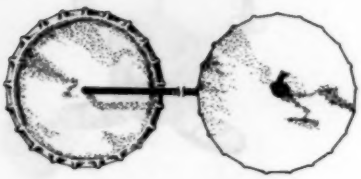
274,282
ANIMAL FIGURE TOY
Gerald A. Seetner, Willowdale, Canada, assignor to Tim Donut Limited, Ontario, Canada
Filed Jun. 8, 1982, Ser. No. 386,459
Claims priority, application Canada, Dec. 14, 1981, 141281
Term of patent 14 years
U.S. Cl. D21—188



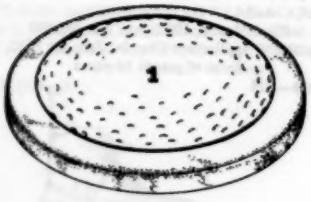
274,283
DUMBBELL
Forrest S. Wright, 533 Hill, Rochester, Mich. 48063
Filed Dec. 11, 1981, Ser. No. 329,639
Term of patent 14 years
U.S. Cl. D21—197

274,284
SKATE
Rene Bourque, Duvernay, Canada, assignor to Warrington Inc., Montreal, Canada
Filed Mar. 8, 1982, Ser. No. 355,849
Claims priority, application Canada, Jan. 29, 1982, 2901828
Term of patent 14 years
U.S. Cl. D21—225

274,285
SWING SEAT
Donald F. Budde, St. Louis, Mo., assignor to Urethane Roller Specialists, Inc., Eureka, Mo.
Filed Jan. 12, 1981, Ser. No. 224,155
Term of patent 14 years
U.S. Cl. D21—246

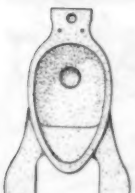


274,286
SWING SEAT
Donald F. Budde, St. Louis, Mo., assignor to Urethane Roller Specialists, Inc., Eureka, Mo.
Filed Mar. 6, 1981, Ser. No. 241,437
Term of patent 14 years
U.S. Cl. D21—246



274,287
HOLDER FOR A TEAR GAS CARTRIDGE
Phillip L. Brookshire; Earl J. Huddleston, and David L. Hust, all of Cincinnati, Ohio, assignors to Bradford Safety Products, Inc., Loveland, Ohio
Filed Jul. 29, 1982, Ser. No. 403,039
Term of patent 14 years
U.S. Cl. D22—1

274,288
COMBINATION URINAL & TOILET
Andrew D. Shanks, 7909 S. Broadway, Everett, Wash. 98203
Filed Mar. 19, 1981, Ser. No. 245,312
Claims priority, application Canada, Sep. 29, 1980, 2909803
Term of patent 14 years
U.S. Cl. D23—49



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TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JUNE, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See*—
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AB Asea-Atom: *See*—
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AB Dentatus: *See*—
Edwardson, Svante R., 4,453,918, Cl. 433-55.000.

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Abel, Heinz; Schafer, Paul; and Berendt, Hans-Ulrich, to Ciba-Geigy Corporation. Dyeing assistant and use thereof in dyeing synthetic fibre material. 4,453,946, Cl. 8-603.000.

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Abild, Robert N. Body channel occluder. 4,453,536, Cl. 128-1.00R.

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Hershel, Ronald S.; and Winn, Ray, 4,453,828, Cl. 356-357.000.

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LeGresley, Barry P., 4,454,600, Cl. 371-25.000.

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Wenstrup, Jan F., 4,453,897, Cl. 417-477.000.

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Ali, Majid; Nalebuff, Donald; Fayemi, Alfred; Ramanarayanan, Madhava P.; and Mesa-Tejada, Ricardo. Enzymatic immunoassay. 4,454,226, Cl. 435-7.000.

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Astrom, Gordon L.; and Herbig, Mark A., to Aqua-Aerobic Systems, Inc. Filter apparatus. 4,454,034, Cl. 210-108.000.

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Chen, Cheng-Hsuan; Ong, Edith C.; Phillips, James C.; and Tai, King L., 4,454,221, Cl. 430-316.000.
Joffe, Daniel M., 4,454,477, Cl. 328-149.000.
Lynch, William T.; and Vratny, Frederick, 4,453,306, Cl. 29-571.000.
Pirz, Frank C.; Rabiner, Lawrence R.; and Wilpon, Jay G., 4,454,586, Cl. 364-513.500.
Sternheim, Marek A.; and van Gelder, Willem, 4,454,001, Cl. 156-626.000.
Trop, Harvey S., 4,454,010, Cl. 204-47.000.

AT&T Technologies, Inc.: *See—*
Ronemus, James R.; Sentman, Lowell; and Wanesky, William R., 4,453,414, Cl. 73-827.000.

Atkinson, Wallace E., to Long Manufacturing Co., Inc. Trunk type lock with throw away key. 4,453,387, Cl. 70-75.000.

Atlantic Richfield Company: *See—*
Gaffney, Anne M.; and Sofranko, John A., 4,454,342, Cl. 560-204.000.
Murphy, John R.; Babiec, John S., Jr.; and Meyers, Joseph A., 4,454,253, Cl. 521-112.000.
Senese, Frank J.; and Baillie, Lloyd A., 4,453,400, Cl. 73-49.200.

Atlas Powder Company: *See—*
Mullay, John J., 4,453,989, Cl. 149-21.000.

Atochem: *See—*
Kervennal, Jacques; Cognion, Jean-Marie; and Durual, Pierre, 4,454,322, Cl. 548-221.000.

Atomic Energy of Canada Limited: *See—*
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Auer, Maria: *See—*
Kolb, Bruno; Pospisil, Peter; and Auer, Maria, 4,453,954, Cl. 55-386.000.

Augustin, Werner. Equipment for the thread-adjusted severing of a segment from a length of fabric. 4,453,658, Cl. 225-95.000.

Ault, James E.: *See—*
Miller, Ronald R.; Barber, William R., Jr.; Hampel, David A.; and Ault, James E., 4,454,205, Cl. 428-556.000.

Autoliv AB.: *See—*
Gueguen, Daniel; and Rothera, Jacques, 4,453,681, Cl. 242-107.40A.

Automation Industrielle SA: *See—*
Sander, Engelbert; and Jeker, Rudolf, 4,454,402, Cl. 219-10.530.

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Chiostri, Mario; and Ceseri, Pierluigi, 4,453,856, Cl. 404-91.000.

Avey, Kenneth F.C., to British Mathews, Limited, The. Apparatus for inspecting the chimbs of cylindrical articles such as kegs. 4,453,314, Cl. 33-178.00E.

AVX Corporation: *See—*
Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, 4,454,529, Cl. 357-75.000.

Ayerst, McKenna & Harrison Inc.: *See—*
Asselin, Andre A.; and Humber, Leslie G., 4,454,150, Cl. 424-274.000.

Azo-Maschinenfabrik Adolf Zimmermann GmbH: *See—*
Link, Otmar, 4,453,473, Cl. 110-106.000.

B. F. Goodrich Company, The: *See—*
Eroskey, Richard E., 4,454,263, Cl. 523-400.000.

B & G Plastics, Inc.: *See—*
Smilow, George; and Kayen, Samuel L., 4,453,655, Cl. 223-87.000.

B O Development Enterprises Ltd.: *See—*
Last, Anthony J.; and Chato, John D., 4,454,436, Cl. 310-11.000.

Babcock & Wilcox Company, The: *See—*
Knudsen, James K., 4,453,416, Cl. 73-861.240.

Babiec, John S., Jr.: *See—*
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Bachot, Jean; and Grosbois, Jean, to Rhone-Poulenc Industries. Process for the preparation of methionine. 4,454,012, Cl. 204-72.000.

Bactex, Inc.: *See—*
Brinton, Charles C., 4,454,116, Cl. 424-92.000.
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Baessler, Konrad: *See—*
Schubert, Hans; and Baessler, Konrad, 4,454,355, Cl. 568-584.000.

Bagley, Melvin R.: *See—*
Pookote, Suseelan R.; and Bagley, Melvin R., 4,454,361, Cl. 568-937.000.

Bailey, William C.: *See—*
Huniu, Sam; and Bailey, William C., 4,453,914, Cl. 431-121.000.

Baillie, Lloyd A.: *See—*
Senese, Frank J.; and Baillie, Lloyd A., 4,453,400, Cl. 73-49.200.

Baird, Malcolm H.: *See—*
Nirdosh, Inderjit; Baird, Malcolm H.; Banerjee, Sanjoy; and Muthuswami, Sirugamani V., 4,454,097, Cl. 423-8.000.

Baker, Steven F.; and Johnston, Albert D., to General Motors Corporation. Locking fuel cap. 4,453,388, Cl. 70-165.000.

Bakker, John A., to Illinois Tool Works Inc. Cord lock. 4,453,292, Cl. 24-115.00G.

Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, to Nikolaevsky Korablestroitelny Institut Imeni Admirala S.O.Makarova. Hydrostatic support structure and liquid-cushion load-carrying apparatus incorporating the same. 4,453,612, Cl. 180-124.000.

Balch, Jacques Y.: *See—*
Ferrieu, Gilbert M. M.; Hetet, Yves J. F.; and Balch, Jacques Y., 4,454,384, Cl. 179-81.00B.

Baldwin, Edward G. M.: *See—*
Harrington, James V.; and Baldwin, Edward G. M., 4,453,471, Cl. 108-55.100.

Baldwin Hardware Manufacturing Corporation: *See—*
Fayerman, Peter; and Shaffer, Elwood, 4,453,753, Cl. 292-348.000.

Ball, Ronald H. Portable handrail splicing and repair apparatus. 4,453,910, Cl. 425-12.000.

Ballato, Arthur: *See—*
Lukaszek, Theodore J.; and Ballato, Arthur, 4,454,443, Cl. 310-348.000.

Ballet Makers, Inc.: *See—*
Terlizzi, Nicholas, Jr.; and Terlizzi, Donald, 4,453,996, Cl. 156-227.000.

Balliello, Paolo, to Ciba-Geigy Corporation. Solid formulations of anionic dyes. 4,453,943, Cl. 8-524.000.

Balster, Lester A.: *See—*
Brown, Robert W.; and Balster, Lester A., 4,454,083, Cl. 264-4.700.

Bandoh, Tadaaki: *See—*
Matsumoto, Hidekazu; Bandoh, Tadaaki; and Maejima, Hideo, 4,454,578, Cl. 364-200.000.

Banerjee, Sanjoy: *See—*
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Bang and Olufsen A/S: *See—*
Jensen, Joergen S., 4,454,548, Cl. 360-66.000.

Bangs, Richard G., to NCR Corporation. Temperature control of ink for ink jet printer. 4,454,518, Cl. 346-140.00R.

Banks, Robert L., to Phillips Petroleum Company. Olefin metathesis and catalyst. 4,454,368, Cl. 585-646.000.

Barber-Colman Company: *See—*
Engelke, Roger P., 4,453,419, Cl. 73-861.660.

Barber, William R., Jr.: *See—*
Miller, Ronald R.; Barber, William R., Jr.; Hampel, David A.; and Ault, James E., 4,454,205, Cl. 428-556.000.

Barenberg, Ernest J., to University of Illinois, The Board of Trustees of the. Load transfer device for joints in concrete slabs. 4,453,360, Cl. 52-396.000.

Bargenquast, Jack R.: *See—*
Braun, Daniel E.; and Bargenquast, Jack R., 4,453,507, Cl. 123-182.000.

Baril, James D.: *See—*
Raftopoulos, Demetrios D.; Baril, James D.; and Reimer, Glenn, 4,453,539, Cl. 128-92.0BC.

Barker, Henry P.; and Rummings, Lewis J., to Plastics Engineering Company. Process for the production of pellets of a heat fusible thermosettable molding composition. 4,454,089, Cl. 264-140.000.

Barker, Milton T., to AMF Inc. Resilient mast hinge. 4,453,482, Cl. 114-93.000.

Barnes, Richard A.; and Bartz, Gregory J., to General Electric Company. Printed circuit board connection system. 4,454,552, Cl. 361-9.000.

Barry, Richard H.; and Lazarus, Jack H., to Hoffmann-La Roche Inc. Methoxsalen dosage forms. 4,454,152, Cl. 424-283.000.

Barthel, Sven; and Eriksen, Gunnar, to Thune-Eureka S/S. Oil-heated roller. 4,453,593, Cl. 165-89.000.

Barton, Richard E.: *See—*
Sennott, Susan C.; Mulligan, Dorothy M.; Sennott, William J., III; Mulligan, Richard T.; and Barton, Richard E., 4,453,695, Cl. 248-660.000.

Bartz, Gregory J.: *See—*
Barnes, Richard A.; and Bartz, Gregory J., 4,454,552, Cl. 361-9.000.

Barzaghi, Fernando: *See—*
Christidis, Yani; and Barzaghi, Fernando, 4,454,155, Cl. 424-317.000.

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Klubovich, Vladimir V.; Basenok, Gennady S.; Konyshev, Leonid K.; Sidorenko, Valery A.; Gleb, Anatoly K.; Zinder, Anatoly M.; Konnikov, Mikhail N.; and Gorelik, Boris E., 4,453,392, Cl. 72-75.000.

BASF Aktiengesellschaft: *See—*
Clauson-Kaas, Niels; Jansen, Gert; and Olsen, Erik, 4,454,318, Cl. 544-241.000.
Kummer, Rudolf; Taglieber, Volker; and Schneider, Heinz-Walter, 4,454,358, Cl. 568-885.000.
Naarmann, Herbert; Naegele, Dieter; and Penzien, Klaus, 4,454,178, Cl. 427-302.000.
Reimer, Karl-Juergen; Pfefferkorn, Dietmar; Koester, Eberhard; Kreimes, Norbert; Andriessen, Wilhelmus; Wagner, Herbert; and Wagner, Werner, 4,453,683, Cl. 242-199.000.
Romberg, Helmut; and Koerner, Horst, 4,453,577, Cl. 141-209.000.
Schweier, Guenther; Gruber, Wolfgang; Metzger, Werner; and Hennenberger, Peter, 4,454,299, Cl. 525-53.000.

BASF Wyandotte Corporation: *See*—
Ramlow, Gerhard G.; Heyman, Duane A.; Grace, Oscar M.; Reichel, Curtis J.; and Hartman, Robert J., 4,454,255, Cl. 521-137.000.
Reichel, Curtis J.; Patton, John T., Jr.; and Narayan, Thirumurti, 4,454,254, Cl. 521-136.000.

Basic Packaging Systems, Inc.: *See*—
Titchenal, Oliver R., 4,453,370, Cl. 53-455.000.

Baumann, Heinz: *See*—
Frisch, Kurt C.; and Baumann, Heinz, 4,454,251, Cl. 521-107.000.

Bayer Aktiengesellschaft: *See*—
Dieterich, Dieter, 4,454,071, Cl. 260-453.00P.
Gruber, Hermann; Wellner, Wolfgang; Diehl, Hermann; and Monig, Dieter, 4,453,358, Cl. 52-309.800.
Lindner, Christian; Liebig, Lothar; and Ott, Karl-Heinz, 4,454,305, Cl. 525-310.000.
Pellicelli, Bruno, 4,454,256, Cl. 521-138.000.
Rau, Hans J.; and Just, Gerhard, 4,453,993, Cl. 156-124.000.
Reischl, Artur; and Wagner, Kuno, 4,454,259, Cl. 523-129.000.

Bayerische Motoren Werke A.G.: *See*—
Hipp, Karl H.; and Detsch, Anton, 4,453,741, Cl. 280-801.000.
Sautter, Wolfgang; and Muller, Rudolf, 4,453,733, Cl. 280-661.000.

Baylor, John T., to Cubic Corporation. Temperature compensation of an oscillator by fractional cycle synthesis. 4,454,483, Cl. 331-11.000.

BBC Brown, Boveri & Company, Limited: *See*—
Gessinger, Gernot; and Schroder, Gunther, 4,453,985, Cl. 148-11.50N.

Beachey, Edwin H., to University of Tennessee Research Corporation, The. Synthetic peptides corresponding to antigenic determinants of the M protein of *Streptococcus pyogenes*. 4,454,121, Cl. 424-177.000.

Bean, Harley F., to Mead Corporation, The. Accumulator. 4,453,870, Cl. 414-43.000.

Bearden, Charles R.: *See*—
Corbett, John M.; and Bearden, Charles R., 4,454,086, Cl. 264-53.000.

Beaumond, Jean-J. Tridimensional metal meshwork as reinforcement for building panels and a method for their manufacture. 4,454,185, Cl. 428-121.000.

Beck, Jeffrey L.; and El-Saie, Ahmed A., to Conoco Inc. Injection of solids into a high pressure slurry stream. 4,453,864, Cl. 406-19.000.

Beck, William W.: *See*—
Smith, David J.; Scharenberg, R. Ted; and Beck, William W., 4,454,084, Cl. 264-40.100.

Beckely, Don A.: *See*—
Street, Sidney W.; and Beckely, Don A., 4,454,283, Cl. 524-424.000.

Becker, Harold L.; and Buriks, Rudolf S., to Petrolite Corporation. Process of treating aqueous systems. 4,454,047, Cl. 210-705.000.

Beckman Instruments, Inc.: *See*—
Bernot, Anthony J.; and Brown, Kenneth, 4,454,167, Cl. 427-96.000.

Bedell, John R., to Electric Power Research Institute, Inc. Continuous casting nozzle with transverse reinforcement structure. 4,453,654, Cl. 222-594.000.

Bedford, Beryl A. Trolley stop for track switch. 4,453,469, Cl. 104-100.000.

Beecham Group Limited: *See*—
Buckle, Derek R.; and Smith, Harry, 4,454,136, Cl. 424-245.000.
Cook, Michael A.; Curzons, Alan D.; and Wilkins, Robert B., 4,454,069, Cl. 260-245.300.

Behmel, Klaus L.: *See*—
Wilfinger, Werner; Behmel, Klaus L.; and Stania, Herbert, 4,453,982, Cl. 106-308.00M.

Behringer, Hartmut; Karrenbauer, Kurt; and Rehberg, Heinrich, to Hoechst Aktiengesellschaft. Continuous production of azo pigments. 4,454,067, Cl. 260-176.000.

Behringwerke Aktiengesellschaft: *See*—
Spitzer, Wolfgang, 4,453,406, Cl. 73-432.00R.

Behrman, David M.: *See*—
Griffen, Neil C.; and Behrman, David M., 4,453,609, Cl. 177-211.000.

Belbel, Elie; Haury, Andre ; Fechant, Louis; and Siffroi, Lucien. Contactor with the properties of a circuit-breaker. 4,454,490, Cl. 335-16.000.

Bell Telephone Laboratories, Incorporated: *See*—
Ashkin, Arthur; Smith, Peter W.; and Tomlinson, Walter J., III, 4,453,805, Cl. 350-162.240.
Coyne, James C., 4,454,566, Cl. 361-386.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,454,593, Cl. 364-900.000.
Judd, Thomas H., 4,454,383, Cl. 178-3.000.
Netravali, Arun N.; and Pirsch, Peter, 4,454,506, Cl. 340-728.000.
Spires, Dewayne A., 4,454,479, Cl. 330-263.000.

Bellitto, Gianfranco: *See*—
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,453,956, Cl. 62-18.000.

Bellott, Emile M., Jr., to Varian Associates, Inc. Methods for conducting electron beam lithography. 4,454,200, Cl. 428-411.100.

Belrecolt S.A.: *See*—
Wattron, Albert; and Quirin, Michel, 4,453,376, Cl. 56-370.000.

Belt, Ronald A.; and Couturier, Guy D., to United States of America, Air Force. Programmable signal processing device. 4,454,590, Cl. 364-724.000.

Bendix Corporation, The: *See*—
Costantini, John J.; Weilbacker, Thomas O.; and Guglielmo, Joseph A., 4,454,577, Cl. 364-200.000.
Horsting, John J., 4,453,450, Cl. 91-5.000.
Vilardo, Louis V.; and Phipps, Jack R., 4,453,896, Cl. 417-462.000.

Bendix Limited: *See*—
Neal, Brian P., 4,453,780, Cl. 303-69.000.

Benjamin, Robert E.; and Edging, Thomas E., to Stauffer Chemical Company. High acid monocalcium phosphate and process for preparing the same. 4,454,103, Cl. 423-309.000.

Bennett, Bobby B. Plastics recycling apparatus. 4,453,905, Cl. 425-192.00R.

Bennett, Richard E.; and Flatt, Donald V., to Minnesota Mining and Manufacturing Company. Dry transfer article. 4,454,179, Cl. 428-41.000.

Benson, Glendon M., to New Process Industries, Inc. Linear electromagnetic machine. 4,454,426, Cl. 290-1.00R.

Benton, William M., to Vericard Corporation. Funds transfer system using optically coupled, portable modules. 4,454,414, Cl. 235-379.000.

Berbeco, George R., to Charleswater Products, Inc. Conductive high-pressure laminate and method of preparation. 4,454,199, Cl. 428-322.200.

Berendt, Hans-Ulrich: *See*—
Abel, Heinz; Schafer, Paul; and Berendt, Hans-Ulrich, 4,453,946, Cl. 8-603.000.

Bereznikov, Ivan N.: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Bergemann, Klaus-Dieter; Kiel, Berad-Joachim; Konig, Heinz-Werner; and Deike, Karl-Heinz, to WABCO Fahrzeugbremsen GmbH. Control arrangement for a pneumatically cushioned vehicle. 4,453,736, Cl. 280-711.000.

Berger, Jenson and Nicholson Limited: *See*—
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,453,651, Cl. 222-82.000.

Bergesio, Giovanni, to Fiat Auto S.p.A. Fuel tank for motor vehicles. 4,453,564, Cl. 137-574.000.

Berglund, Jan, to Wicanders AB. Cap with tear-off tag. 4,453,644, Cl. 215-255.000.

Bergmann, Horst: *See*—
Perrin, Gunter; and Bergmann, Horst, 4,453,513, Cl. 123-279.000.

Bergmann, Roland: *See*—
Kittelmann, Udo; Diehl, Manfred; Bergmann, Roland; and Stadtmuller, Gunter, 4,454,056, Cl. 252-174.150.

Bergstrand, Gunnar. Force amplifying displacement device. 4,453,455, Cl. 92-117.00A.

Bergwerksverband GmbH: *See*—
Meyer, Frank, 4,454,252, Cl. 521-110.000.

Berke, Philip A.; and Rosen, William E., to Sutton Laboratories, Inc. Antimicrobial compounds. 4,454,133, Cl. 424-267.000.

Berkeley, Bernard, to Hysan Corporation. Diphase drain cleaner. 4,453,983, Cl. 134-22.140.

Berkey, George E., to Corning Glass Works. Method of making glass optical fiber. 4,453,961, Cl. 65-3.120.

Bernot, Anthony J.; and Brown, Kenneth, to Beckman Instruments, Inc. Process for generating conductive patterns. 4,454,167, Cl. 427-96.000.

Bertell, Jerome W., to Penswalt Corporation. Aqueous release agent and lubricant. 4,454,050, Cl. 252-42.000.

Betz, Ferdinand, to Dr.-Ing. Ludwig Muller & Sohne-Gesellschaft fur Bautechnik mbH & Co. KG, Firma. Load stop device. 4,453,622, Cl. 188-265.000.

Bey, Philippe, to Merrell Toraude et Compagnie. Allyl amine MAO inhibitors. 4,454,158, Cl. 424-330.000.

Bierman, John H. Telescoping wall scaffold. 4,453,619, Cl. 182-142.000.

Bijen, Jan M. J. M., to Stamicarbon B.V. Method for preparing glass-fiber reinforced cement composites. 4,454,285, Cl. 524-5.000.

Bimba, Charles W. Connector system for flexible tubing. 4,453,747, Cl. 285-305.000.

Binard, Jean, to Creusot-Loire. Extendable modular vacuum chamber. 4,454,407, Cl. 219-121.0EL.

Binet, Daniel: *See*—
Dawans, Francois; Binet, Daniel; Kohler, Norbert; and Vu, Quang D., 4,454,260, Cl. 523-130.000.

Bingemann, Wilhelm: *See*—
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Binks Manufacturing Company: *See*—
Sirovy, Robert L., 4,453,670, Cl. 239-117.000.

Bio-Rad Laboratories, Inc.: *See*—
Breglio, Susan E.; and Hanamoto, Mark S., 4,454,232, Cl. 436-504.000.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and LiCause, Joseph, 4,453,937, Cl. 604-319.000.

Bioresearch S.r.l.: *See*—
Stramentinoli, Giorgio; and Gennari, Federico, 4,454,122, Cl. 424-180.000.

Birkmair, Hubert: *See*—
Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, 4,453,465, Cl. 101-228.000.

Bischoff, Peter G., to Memorex Corporation. Etched article. 4,454,014, Cl. 204-129.650.

Bishkin, D. Bruce. Crystal washing and purification method. 4,453,959, Cl. 62-542.000.

Bisiach, Luciano. Industrial robot. 4,453,883, Cl. 414-735.000.
Bjorling, Gotthard: *See*—
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Bjorling, Karl T.; and Groberg, Ann-Marie M. S., to Alfa-Laval AB. Test indicator for substances in liquids. 4,454,094, Cl. 422-56.000.
Black & Decker Inc.: *See*—
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,453,651, Cl. 222-82.000.
Huber, Siegfried, 4,454,459, Cl. 318-305.000.
Blais, Phillip D., to Westinghouse Electric Corp. High resolution soft x-ray or ion beam lithographic mask. 4,454,209, Cl. 430-5.000.
Blank, Werner J.: *See*—
Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., 4,454,301, Cl. 525-118.000.
Blaschke, Felix; and Salzmann, Theodor, to Siemens Aktiengesellschaft. Apparatus for the control of a salient-pole machine. 4,454,461, Cl. 318-717.000.
Blatt, Leland F.; and Laing, John G., to Blatt, Leland F. Vacuum cup venturi assembly and blow off silencer. 4,453,755, Cl. 294-64.00A.
Block, Michael J., to Union Oil Company of California. Carbon-metal phosphate ester composite and method of making. 4,454,193, Cl. 428-322.700.
Blondet, Joel C. F.: *See*—
Lorek, Georges; and Blondet, Joel C. F., 4,453,674, Cl. 239-483.000.
Bloom Engineering Company, Inc.: *See*—
Finke, Harry P.; and Shannon, Robert A., 4,453,915, Cl. 432-11.000.
Blue Giant Equipment of Canada Ltd.: *See*—
Larsen, Kurt K., 4,453,282, Cl. 14-71.100.
Blumbach, Jurgen: *See*—
Mencke, Burkhard; Ehlers, Eberhard; Blumbach, Jurgen; Durckheimer, Walter; and Seeger, Karl, 4,454,129, Cl. 424-246.000.
Blumenthal, Klaus, to Lohmann GmbH & Co. KG. Dispenser pack. 4,453,634, Cl. 206-389.000.
Board of Overseers of Goshen College: *See*—
Jacobs, Merle E., 4,453,941, Cl. 8-424.000.
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Penta, Vincent L.; Boba, Joseph; Conger, Robert P.; and Charlton, Ralph W., 4,454,188, Cl. 428-172.000.
Bobick, Thomas W.; Clark, Frederic L.; Jongerling, Henry W.; Kockler, Barry C.; and Mitrovich, Svetislav, to Mead Corporation, The. Duplex printing system and method therefor. 4,453,841, Cl. 400-126.000.
Bobovnikov, Nikolai G.: *See*—
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., to Merck & Co., Inc. Pharmaceutical compositions of novel substituted pyrazinyl-1,2,4-oxadiazoles useful in the treatment of edema and hypertension. 4,454,132, Cl. 424-250.000.
Boden, Richard M.; Vock, Manfred H.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Prenyl methyl carbonate and organoleptic uses thereof. 4,454,111, Cl. 424-58.000.
Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Kolb, Bruno; Pospisil, Peter; and Auer, Maria, 4,453,954, Cl. 55-386.000.
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Boeckmann, Eduard F. B.: *See*—
Grantland, Gary; and Boeckmann, Eduard F. B., 4,454,385, Cl. 179-81.00R.
Boehringer Ingelheim KG: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, 4,454,149, Cl. 424-273.00R.
Boeing Company, The: *See*—
Cleary, Patrick J.; and Hopperstad, Craig A., 4,454,582, Cl. 364-427.000.
Pollock, Marlan R.; and Harp, Marlyn F., 4,454,248, Cl. 521-53.000.
Boettner, Fred H.; and Walker, Loren H., to General Electric Company. Method and apparatus for frequency measurement of an alternating current signal. 4,454,470, Cl. 324-78.00R.
Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Catalyst system for production of organolithium compounds and lithium hydride. 4,454,243, Cl. 502-167.000.
Bojarski, Suzette M.: *See*—
Coughlan, Raymond T.; and Bojarski, Suzette M., 4,454,266, Cl. 524-44.000.
Bondarenko, Alexandr S.: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.
Bonora, Anthony C.: *See*—
Lorenzini, Robert E.; Bonora, Anthony C.; and Lorenz, Karl, 4,454,096, Cl. 422-249.000.
Boothe, James H.: *See*—
Curran, William V.; Sassiver, Martin L.; and Boothe, James H., 4,454,336, Cl. 560-13.000.
Borden, Ernest C.; and Shrago, Earl S., to Wisconsin Alumni Research Foundation. Method of reducing the level of low density lipoproteins in the serum of a patient. 4,454,115, Cl. 424-85.000.
Borg-Warner Corporation: *See*—
Cole, Edward H., Jr., 4,453,923, Cl. 474-47.000.
Halpern, Yuval; and Niswander, Ron H., 4,454,064, Cl. 260-974.000.
Klimek, Edmund J.; and Roberts, Richard W., 4,453,300, Cl. 29-156.40R.
Borne, Andre; Guernet, Henri; and Marmonier, Andre, to CGEE Alsthom. Structure for fixing a device on a supporting channel bar. 4,454,382, Cl. 174-158.00R.
Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, to Schering Aktiengesellschaft. Carbaminic acid esters with herbicidal properties. 4,453,966, Cl. 71-88.000.
Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, to Schering Aktiengesellschaft. Carbaminic acid esters with herbicidal properties. 4,453,973, Cl. 71-105.000.
Borovian, Gayle E., to Lever Brothers Company. Synergistic preservative compositions. 4,454,146, Cl. 424-270.000.
Borzatta, Valerio: *See*—
Cristofori, Manlio; Borzatta, Valerio; and Morotti, Mauro, 4,454,145, Cl. 424-266.000.
Bourque, Rene, to Warrington Inc. Goaler skate boot. 4,453,727, Cl. 280-11.120.
Bousum, John V.: *See*—
Helms, Charles R.; Bousum, John V.; Walters, Richard T.; and Carr, William H., 4,453,630, Cl. 206-158.000.
Bouton, John C.: *See*—
Faulkner, Albert A.; and Bouton, John C., 4,453,807, Cl. 350-529.000.
Brachert, Heinrich; and Homburg, Axel, to Dynamit Nobel Aktiengesellschaft. Firedamp-safe method for stud driving cartridges. 4,453,860, Cl. 405-259.000.
Bradberry, George: *See*—
Sutton, Russell L.; and Bradberry, George, 4,453,863, Cl. 405-282.000.
Bradley, John J., to Paper Converting Machine Company. Multiple web unit handling apparatus with cut-off rolls. 4,453,706, Cl. 270-54.000.
Bradshaw, Richard L.; Falcone, Samuel J.; and Simonetti, Alexander, to International Business Machines Corporation. Water-based chromium dioxide magnetic recording media. 4,454,282, Cl. 524-407.000.
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., to Black & Decker Inc.; and Berger, Jenson and Nicholson Limited. Cartridge assembly. 4,453,651, Cl. 222-82.000.
Brantley, James W., to General Electric Company. Blading system for a gas turbine engine. 4,453,890, Cl. 416-220.00R.
Braschler, Boyce D.; Diddens, Paul A.; Erickson, Roger D.; and O'Toole, Charles J., Jr., to Honeywell Inc. Electrographic recorder with enhanced writing speed. 4,454,520, Cl. 346-153.100.
Braun, Daniel E.; and Bargenquast, Jack R., to Briggs & Stratton Corporation. Centrifugally responsive compression release mechanism. 4,453,507, Cl. 123-182.000.
Breglio, Susan E.; and Hanamoto, Mark S., to Bio-Rad Laboratories, Inc. Estriol assay. 4,454,232, Cl. 436-504.000.
Brendling, Lennart I., to Landstingens Inkopscentral, LIC, Ekonomisk Forening. Urine collecting incontinence guard. 4,453,938, Cl. 604-346.000.
Brenkley, David: *See*—
Mullins, Rex; and Brenkley, David, 4,453,846, Cl. 405-299.000.
Brennan, Thomas M.; and Hendrick, Michael E., to Pfizer Inc. Branched amides of L-aspartyl-D-amino acid dipeptides. 4,454,328, Cl. 549-28.000.
Brenner, Raul: *See*—
Strauss, Michael G.; and Brenner, Raul, 4,454,424, Cl. 250-390.000.
Breton, Michael P.: *See*—
Hulsey, Eldon E.; and Mast, Burton T., 4,453,699, Cl. 251-63.400.
Bretz, Helmut; and Eberle, Hubert, to Josef Riepl Bau-AG, Firma. Trench walls and method for constructing same. 4,453,861, Cl. 405-267.000.
Breuer, Oswald: *See*—
Merten, Gerhard; Steinkuhl, Bernd; and Breuer, Oswald, 4,453,771, Cl. 299-34.000.
Bridges, William B.; and Popa, Adrian E., to Hughes Aircraft Company. Evanescent-wave coupling device. 4,453,802, Cl. 350-96.150.
Bridigum, Robert J., to American Standard Inc. Adjustable variable load control valve device. 4,453,779, Cl. 303-22.00A.
Brien, Gerald J.; and Hall, Jeffrey L., to Eastman Kodak Company. Photographic bleaching compositions. 4,454,224, Cl. 430-393.000.
Briggs & Stratton Corporation: *See*—
Braun, Daniel E.; and Bargenquast, Jack R., 4,453,507, Cl. 123-182.000.
Bright, Edward J.; and Pauza, William V., to AMP Incorporated. High current drawer connector. 4,453,792, Cl. 339-64.00R.
Bright, Gary C.: *See*—
Hite, W. Lee; and Bright, Gary C., 4,453,491, Cl. 118-425.000.
Brint, Norman T.; and Comley, Jack W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Firearms with rotary magazines. 4,453,329, Cl. 42-15.000.
Brinton, Charles C., to Bactex, Inc. Immunization of humans against enterotoxogenic infection by *Escherichia coli*. 4,454,116, Cl. 424-92.000.
Brinton, Charles C., to Bactex, Inc. Immunization against infection by *Escherichia coli*. 4,454,117, Cl. 424-92.000.
Brissonneau & Lotz Marine: *See*—
Guiader, Alain Y., 4,453,858, Cl. 405-198.000.

British Mathews, Limited, The: *See*—
Avey, Kenneth F.C., 4,453,314, Cl. 33-178.00E.
Britton, Arthur. Sheet material comprising layers of aligned strands completely surrounded by adhesive. 4,454,184, Cl. 428-110.000.
Brookbank, Earl B., III, to TRW Inc. Submergible pump installations. 4,453,892, Cl. 417-279.000.
Brown Boveri Electric, Inc.: *See*—
DeLacy, James P., 4,454,555, Cl. 361-59.000.
Brown, David E.: *See*—
Aschenbach, Louis F.; and Brown, David E., 4,454,398, Cl. 200-302.300.
Brown, Kenneth: *See*—
Bernot, Anthony J.; and Brown, Kenneth, 4,454,167, Cl. 427-96.000.
Brown, Richard A.; Caropreso, Frank E.; Lymburner, Charles J.; and Norris, Robert D., to FMC Corporation. Stimulation of hydrocarbon flow from a geological formation. 4,453,597, Cl. 166-303.000.
Brown, Robert W.; and Balster, Lester A., to Appleton Papers Inc. Continuous microencapsulation. 4,454,083, Cl. 264-4.700.
Bruckl, Konrad; and Fryda, Georg, to Agfa-Gevaert AG. Clamping arrangement for corona discharge wire. 4,453,293, Cl. 24-131.00C.
Brunbeck, Richard T.; and Sherwood, Joseph C., to SCM Corporation. Treating waste water contaminated with a low concentration of latex. 4,454,048, Cl. 210-726.000.
Brunner, Rudolf, to Heilmeier & Weinlein Fabrik Fuer Oel-Hydraulik GmbH & Co. KG. Hydraulic control device. 4,453,453, Cl. 91-451.000.
Bryant, Charles P.: *See*—
Pindar, John F.; Cohen, Jerome M.; and Bryant, Charles P., 4,454,059, Cl. 252-51.50R.
Buck, Dean C.; Warren, Richard E.; Smith, David E.; and Rustici, David, to Hewlett-Packard Company. Distance transducer. 4,453,825, Cl. 356-5.000.
Buckfelder, John J.; and Schleinitz, Henry M., to Du Pont de Nemours, E. I., and Company. Supported reverse osmosis membranes. 4,454,176, Cl. 427-246.000.
Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Substituted benzopyranotriazoles and antiallergic use. 4,454,136, Cl. 424-245.000.
Budzinski, John C.: *See*—
Levitt, George; Yeh, Chin-Lung; and Budzinski, John C., 4,453,970, Cl. 71-93.000.
Buennagel, James A.; and Koch, Richard C., to Regency Electronics, Inc. Apparatus for addressably controlling remote units. 4,454,509, Cl. 340-825.690.
Buonome, Frank. Method of converting ocean wave action into electrical energy. 4,454,429, Cl. 290-53.000.
Burchard, Hans; and Steinecke, Rudolf, to Daimler-Benz Aktiengesellschaft. Axle suspension for motor vehicles. 4,453,737, Cl. 280-725.000.
Burge, Theodor; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, to Sika AG, vorm. Kaspar Winkler & Co. Phenol modified sulfamate-melamine-formaldehyde resin. 4,454,311, Cl. 528-245.000.
Buriks, Rudolf S.: *See*—
Becker, Harold L.; and Buriks, Rudolf S., 4,454,047, Cl. 210-705.000.
Burlington Industries, Inc.: *See*—
Key, Worth M., 4,453,572, Cl. 139-302.000.
London, Joe F., Jr.; and Pugh, Charles D., 4,453,297, Cl. 28-163.000.
Burmakin, Viktor I.: *See*—
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.
Burns, Charles F.; and Pilcicki, Edward J., to Pennwalt Corporation. Low silver containing dental amalgam alloys. 4,453,977, Cl. 75-255.000.
Burns, Darrell M., to Hewlett-Packard Company. CCD Amplifier using second correlated sampling and negative feedback for noise reduction. 4,454,435, Cl. 307-530.000.
Burns, W. Mike. Apparatus for filling containers such as communion cups. 4,453,576, Cl. 141-168.000.
Burroughs Corporation: *See*—
Grow, Robert M., 4,454,508, Cl. 340-825.050.
Peter, Emmett B., III; and O'Brien, Michael K., 4,454,419, Cl. 250-239.000.
Burton, Robert S.: *See*—
Ricketts, Thomas E.; and Burton, Robert S., 4,453,769, Cl. 299-2.000.
Busch, James R.: *See*—
Verber, Carl M.; and Busch, James R., 4,453,801, Cl. 350-96.120.
Bush, Alvin A.; Giorgis, John, Jr.; and Anderson, Thomas E., to General Electric Company. Push-pull stored charge inverter circuit with rapid switching. 4,454,574, Cl. 363-134.000.
Bush, Robert D.; and Cowles, Dean S., to General Instrument Corporation. Keyswitch with telescoping plunger. 4,454,562, Cl. 361-288.000.
Bushaw, Kenneth A.; and Woodward, Milton H., to International Business Machines Corporation. Shared memory system with access by specialized peripherals managed by controller initialized by supervisory CPU. 4,454,575, Cl. 364-200.000.
Busse, Charles E.: *See*—
Cress, Allan K.; and Busse, Charles E., 4,453,998, Cl. 156-350.000.
Bussey, Stephen; Cockburn, Barry; and Heath, Alastair E. F., to Leslie Hartridge, Ltd. Volumetric metering equipment. 4,453,403, Cl. 73-119.00A.
Butler, Donald E., to Warner-Lambert Company. 5-Oxo-2,2-pyrrolidinedipropanoic acid and ester derivatives thereof. 4,454,327, Cl. 548-551.000.
Butts, Orville R., to Roper Corporation. Prompting control. 4,454,501, Cl. 340-365.00R.
C. Plath KG: *See*—
Rahn, Armin, 4,453,317, Cl. 33-366.000.
Cadre Corporation, The: *See*—
Gitman, Grigory M., 4,453,913, Cl. 431-8.000.
Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., to American Cyanamid Company. Crosslinking coating compositions. 4,454,301, Cl. 525-118.000.
Cage, Curtis, to Pitney Bowes Inc. Buffer for use with a fixed disk controller. 4,454,595, Cl. 364-900.000.
Cain, Earl S.; and Carlson, Jerome A., to Tribotech. Differential expansion contraction structural interconnection system. 4,453,853, Cl. 403-28.000.
Cain, Troy D.: *See*—
Frina, Robert; Cain, Troy D.; Gallagher, John J., Jr.; and Watson, William, 4,453,872, Cl. 414-22.000.
Cais, Michael; and Shimoni, Moshe, to Technion Research and Development Foundation, Ltd. Method and device for mass transfer operation in immunoassays and other applications. 4,454,231, Cl. 436-500.000.
California Pellet Mill Company: *See*—
Visser, Odd M., 4,453,908, Cl. 425-331.000.
Caltherm Corporation: *See*—
Abel, Martin L., 4,453,668, Cl. 236-34.500.
Campbell Soup Company: *See*—
Egee, Walter W., 4,453,368, Cl. 53-430.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Silverthorn, Gideon C., 4,453,544, Cl. 128-206.170.
Canalizo, Carlos R., to Otis Engineering Corporation. Gas control system. 4,453,568, Cl. 137-624.140.
Canon Kabushiki Kaisha: *See*—
Itani, Takashi; Kozuki, Susumu; and Narasawa, Takashi, 4,454,532, Cl. 358-29.000.
Miyake, Hiroyuki; Sagara, Seiji; Kagiura, Kazuo; Sasaki, Nobukazu; and Yonemori, Takaji, 4,453,824, Cl. 355-57.000.
Satoh, Toshihiko; and Ichiyanagi, Toshikazu, 4,453,814, Cl. 354-107.000.
Sugita, Yasutoshi; and Ando, Yoshio, 4,453,823, Cl. 355-50.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,453,812, Cl. 354-403.000.
Takasu, Yoshio; and Ishikawa, Shozo, 4,454,211, Cl. 430-59.000.
Tsuji, Sadahiko, 4,453,813, Cl. 354-480.000.
Verber, Carl M.; and Busch, James R., 4,453,801, Cl. 350-96.120.
Capella, Sebastian. Collapsible artist's easel. 4,453,470, Cl. 108-26.000.
Cargill Incorporated: *See*—
Olson, Morris R., 4,454,273, Cl. 524-317.000.
Carl, David F.: *See*—
Streeter, Robert T.; and Carl, David F., 4,453,451, Cl. 91-28.000.
Carlingswitch, Inc.: *See*—
Krasij, Bohdan; and Mune, Charles, 4,454,565, Cl. 361-376.000.
Sorenson, Richard W., 4,454,400, Cl. 200-315.000.
Carlson, Jerome A.: *See*—
Cain, Earl S.; and Carlson, Jerome A., 4,453,853, Cl. 403-28.000.
Carnes, Ronald C.: *See*—
Naumann, Ted F., Jr.; and Carnes, Ronald C., 4,453,409, Cl. 73-639.000.
Caropreso, Frank E.: *See*—
Brown, Richard A.; Caropreso, Frank E.; Lymburner, Charles J.; and Norris, Robert D., 4,453,597, Cl. 166-303.000.
Carr, William H.: *See*—
Helms, Charles R.; Bousum, John V.; Walters, Richard T.; and Carr, William H., 4,453,630, Cl. 206-158.000.
Carter, Russell P., Jr., to Mobay Chemical Corporation. Polycarbonate-calcite compositions. 4,454,261, Cl. 523-200.000.
Carter, William R. Flow measuring device for fluid conveying systems. 4,453,415, Cl. 73-861.040.
Caruso, Richard. Hair curler. 4,453,554, Cl. 132-39.000.
Casara, Patrick, to Merrell-Toraude et Compagnie. 4-Amino-hepta-5,6-dienoic acid. 4,454,156, Cl. 424-319.000.
Casey, Daniel T., to AMP Incorporated. Terminating tool. 4,453,307, Cl. 29-751.000.
Casio Computer Co., Ltd.: *See*—
Mitarai, Tsuyoshi, 4,453,440, Cl. 84-1.220.
Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, to Forsyth Dental Infirmary for Children. Self-gelling liquid composition for topical application in the oral cavity. 4,454,110, Cl. 424-54.000.
Cason, William C.; White, Freddie R.; Adam, Thomas L.; and Levine, Lewis J., to International Business Machines Corporation. Prompt line display in a word processing system. 4,454,592, Cl. 364-900.000.
Cassens, Nicholas, Jr., to Kaiser Aluminum & Chemical Corporation. Carbonaceous refractory composition for pressing brick shapes. 4,454,239, Cl. 501-99.000.
Cassou, Bertrand: *See*—
Cassou, Robert, 4,453,936, Cl. 604-263.000.
Cassou, Maurice: *See*—
Cassou, Robert, 4,453,936, Cl. 604-263.000.
Cassou, Robert, to Cassou, Maurice; and Cassou, Bertrand. Sleeve for protection against internal contaminations for a gynaecological gun in particular for bovines. 4,453,936, Cl. 604-263.000.

Castel, John C.; and Kerwin, Richard G., to Physio Technology, Inc. T-Wave inhibiting system. 4,453,547, Cl. 128-421.000.
Castellan, Bernard: *See*—
Sedillot, Francois G.; Hudson, William L.; and Castellan, Bernard, 4,453,859, Cl. 405-202.000.
Castelli, Joseph T.; and Desmet, Maccalleen C. Athletic supporter. 4,453,541, Cl. 128-158.000.
Caterpillar Tractor Co.: *See*—
Roussin, Michael A., 4,453,772, Cl. 299-37.000.
Cecere, Andrew P.: *See*—
Diggle, Edmund A., Jr.; and Cecere, Andrew P., 4,454,171, Cl. 427-209.000.
Celamerck GmbH & Co., KG: *See*—
Schroder, Ludwig; Stransky, Werner; Mengel, Rudolf; and Linden, Gerbert, 4,453,972, Cl. 71-94.000.
Ceseri, Pierluigi: *See*—
Chiostri, Mario; and Ceseri, Pierluigi, 4,453,856, Cl. 404-91.000.
CGEE Alsthom: *See*—
Borne, Andre; Guernet, Henri; and Marmonier, Andre, 4,454,382, Cl. 174-158.00R.
Chadwick, Donald T.: *See*—
Ellis, Warren K.; and Chadwick, Donald T., 4,453,689, Cl. 248-288.100.
Chalfin, Edward: *See*—
Gontowski, Walter S., Jr.; and Chalfin, Edward, 4,454,416, Cl. 250-214.00A.
Champion International Corporation: *See*—
Roccaforte, Harry I.; and Scott, Raymond G., 4,453,665, Cl. 229-41.00B.
Chandler Evans, Inc.: *See*—
Zagranski, Raymond D.; and Howlett, James J., 4,453,378, Cl. 60-39.020.
Chapelsky, Orest; and Zausmer, Norman A., to Michlin Diazo Products Corp. Collapsible wall closure for dispensers. 4,453,653, Cl. 222-528.000.
Charleswater Products, Inc.: *See*—
Berbeco, George R., 4,454,199, Cl. 428-322.200.
Charlins, Carolyn A.: *See*—
Charlins, Richard J., 4,453,489, Cl. 114-288.000.
Charlins, Richard J., to Charlins, Richard J.; and Charlins, Carolyn A. Boat hull with inverted chines. 4,453,489, Cl. 114-288.000.
Charlton, Ralph W.: *See*—
Penta, Vincent L.; Boba, Joseph; Conger, Robert P.; and Charlton, Ralph W., 4,454,188, Cl. 428-172.000.
Chato, John D.: *See*—
Last, Anthony J.; and Chato, John D., 4,454,436, Cl. 310-11.000.
Chemie Linz Aktiengesellschaft: *See*—
Heger, Friedl, 4,454,277, Cl. 524-211.000.
Chemische Werke Huls Aktiengesellschaft: *See*—
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,454,317, Cl. 544-193.000.
Chen, Cheng-Hsuan; Ong, Edith C.; Phillips, James C.; and Tai, King L., to AT&T Bell Laboratories. Anisotropic wet etching of chalcogenide glass resists. 4,454,221, Cl. 430-316.000.
Cheshire, Phillip, to Imperial Chemical Industries Plc. Elimination process. 4,454,307, Cl. 525-379.000.
Chester Labs, Inc.: *See*—
Newton, W. Howard, 4,453,935, Cl. 604-197.000.
Cheung, Harry: *See*—
Pahade, Ravindra F.; Ziemer, John H.; and Cheung, Harry, 4,453,957, Cl. 62-25.000.
Chevron Research Company: *See*—
Goodrich, Judson E., 4,454,269, Cl. 524-69.000.
Hutchison, Stanley O., 4,453,570, Cl. 138-149.000.
Chicago Bridge & Iron Company: *See*—
Andrepont, John S., 4,453,960, Cl. 62-542.000.
Child, Francis W., to Child Laboratories Inc. Method and instrument for placing implant in teat duct and udder. 4,453,930, Cl. 604-59.000.
Child Laboratories Inc.: *See*—
Child, Francis W., 4,453,930, Cl. 604-59.000.
Chion, Pierre; Menault, Jacques; Rodier, Henry; and Sacre, Jean-Paul, to Rhone-Poulenc-Textile. Solutions, which can be shaped, from mixtures of cellulose and polyvinyl chloride, and shaped articles resulting therefrom and the process for their manufacture. 4,454,091, Cl. 264-171.000.
Chiostri, Mario; and Ceseri, Pierluigi, to Autostrade-Concessioni e Costruzioni Autostrade S.p.A. Self-propelled operating apparatus for the regeneration pavement. 4,453,856, Cl. 404-91.000.
Chiyoda Chemical Engineering and Construction Co., Ltd.: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.
Chou, Hsin-hsin: *See*—
Hendrickson, William A.; Sherman, Dudley M.; Chou, Hsin-hsin; and Kolpe, Vasant V., 4,454,186, Cl. 428-148.000.
Christensen, Kim I.: *See*—
Larsen, Bent H.; and Christensen, Kim I., 4,453,602, Cl. 172-707.000.
Christenson, Roger M.: *See*—
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and Christenson, Roger M., 4,454,274, Cl. 524-157.000.
Christian, John B.: *See*—
Tamborski, Christ; Snyder, Carl E., Jr.; and Christian, John B., 4,454,349, Cl. 568-13.000.
Christidis, Yani; and Barzaghi, Fernando, to Roussel UCLAF. Pharmaceutical compositions containing a mono-substituted derivative of 4-phenyl-4-oxobuten-2-oic acid, and methods of using them in treating gastric and gastroduodenal ailments. 4,454,155, Cl. 424-317.000.
Christoperson, Dale. Swivel switch game. 4,453,718, Cl. 273-249.000.
Chu, Victor F. Opaque image formation in toned photopolymer layers using leaching solution. 4,454,217, Cl. 430-253.000.
Chugai Seiyaku Kabushiki Kaisha: *See*—
Iida, Yoshimitsu; Yoshizawa, Atsuko; Kujirai, Tatuo; and Ogasawara, Toshichika, 4,454,108, Cl. 424-16.000.
Ciba-Geigy Corporation: *See*—
Abel, Heinz; Schafer, Paul; and Berendt, Hans-Ulrich, 4,453,946, Cl. 8-603.000.
Balliello, Paolo, 4,453,943, Cl. 8-524.000.
Liechti, Peter; Clement, Antoine; Eugster, Peter; and Meyer, Kurt, 4,453,944, Cl. 8-526.000.
Martin, Henry, 4,453,969, Cl. 71-90.000.
Martin, Henry, 4,453,974, Cl. 71-105.000.
Parham, Marc E.; Spearman, Stephen A.; and Cookson, Gleason O., 4,454,347, Cl. 564-428.000.
Puntener, Alois, 4,453,942, Cl. 8-437.000.
Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, 4,454,114, Cl. 424-70.000.
Wurmli, Albert; and Tempel, Christel, 4,453,744, Cl. 346-216.000.
Cieloszyk, Gary S.: *See*—
Heitz, William D.; Ealer, George E.; and Cieloszyk, Gary S., 4,454,281, Cl. 524-399.000.
Cillario, Lorenzo, to Ferrero S.p.A. Adjustable, sectional display device. 4,453,640, Cl. 211-133.000.
Cisar, James R.; and Grauzer, Attila, to U.C. Industries. Method and apparatus for monitoring the thickness of a foamed extrudate in an environmental control chamber downstream of an extrusion die. 4,454,082, Cl. 264-40.100.
Citizen Watch Company Limited: *See*—
Saitoh, Mitsuo, 4,453,833, Cl. 368-88.000.
Suzuki, Fuminori; Yoshida, Makoto; and Morokawa, Shigeru, 4,453,834, Cl. 368-201.000.
Clark, Frederic L.: *See*—
Bobick, Thomas W.; Clark, Frederic L.; Jongerling, Henry W.; Kockler, Barry C.; and Mitrovich, Svetislav, 4,453,841, Cl. 400-126.000.
Clark, Roger T.: *See*—
Gardner, David M.; and Clark, Roger T., 4,454,321, Cl. 546-184.000.
Clark, Warren P. Automatic photographic processing apparatus utilizing a microcomputer. 4,453,817, Cl. 354-299.000.
Clarke, Ronald A. W., to Animotion Inc. Solar display kiosk. 4,453,327, Cl. 40-562.000.
Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Cleaning cartridge assembly for a cassette cleaner. 4,454,550, Cl. 360-137.000.
Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Cleaning apparatus for a cassette player. 4,454,551, Cl. 360-137.000.
Clauson-Kaas, Niels; Jansen, Gert; and Olsen, Erik, to BASF Aktiengesellschaft. Method for producing 4-chloro-5-amino-2-phenyl-3(2H)-pyridazinone from 4,5-dichloro-2-phenyl-3(2H)-pyridazione and ammonia. 4,454,318, Cl. 544-241.000.
Clawson, Burrell E.; and Weigl, James. Temperature sensor. 4,453,835, Cl. 374-185.000.
Claycomb, Jack R., to Dresser Industries, Inc. Drilling orientation tool. 4,454,598, Cl. 367-83.000.
Clayman, William. Device for testing ultrasonic beam profiles. 4,453,408, Cl. 73-1.0DV.
Cleary, Patrick J.; and Hopperstad, Craig A., to Boeing Company, The. Method and apparatus for continuously determining a chronodrasic interval. 4,454,582, Cl. 364-427.000.
Clement, Antoine: *See*—
Liechti, Peter; Clement, Antoine; Eugster, Peter; and Meyer, Kurt, 4,453,944, Cl. 8-526.000.
Clement, Burke. Gear wrench having adjustment to assure proper meshing. 4,453,433, Cl. 81-57.290.
Clemmow, Raymond J., to Padley & Venables Limited. Cutting tool and method of manufacturing such a tool. 4,453,775, Cl. 299-81.000.
Cleveland Clinic Foundation, The: *See*—
Steiger, Ezra, 4,453,928, Cl. 604-53.000.
Cleveland, William K. S.; and Pabis, William J., to General Electric Company. Semi-conductive, moisture barrier shielding tape and cable. 4,454,379, Cl. 174-107.000.
Cliffside Pipelayers, A Division of Banister Continental Ltd.: *See*—
Thompson, Clifford F., 4,453,399, Cl. 73-40.50R.
Clower, William J. Protective cover for golf clubs. 4,453,632, Cl. 206-315.400.
Coal Industry (Patents) Limited: *See*—
Mullins, Rex; and Brenkley, David, 4,453,846, Cl. 405-299.000.
Coats, John H.: *See*—
Whaley, Howard A.; Snyder, William C.; Greenfield, John C.; and Coats, John H., 4,454,228, Cl. 435-253.000.
Cockburn, Barry: *See*—
Bussey, Stephen; Cockburn, Barry; and Heath, Alastair E. F., 4,453,403, Cl. 73-119.00A.
Cockeram, John M.; and Wurmb, Herbert, to S.G. Owen Limited. Method of, and a machine for, electroplating. 4,454,009, Cl. 204-15.000.
Codding, Elias H., to Delta Technology Corporation. Agricultural product sorting. 4,454,029, Cl. 209-581.000.
Codner, James H. Pipe lifting hook having clamp assembly. 4,453,758, Cl. 294-104.000.

Cognion, Jean-Marie: *See—*
Kervennal, Jacques; Cognion, Jean-Marie; and Durual, Pierre, 4,454,322, Cl. 548-221.000.
Cohen, Jerome M.: *See—*
Pindar, John F.; Cohen, Jerome M.; and Bryant, Charles P., 4,454,059, Cl. 252-51.50R.
Cohen, Joel B.; and Marhefka, Matthew D., to Shell Containers, Inc. (PA). Cabinet drawer stop assembly. 4,453,790, Cl. 312-348.000.
Cohn, Charles C. Treatment of cigarette paper. 4,453,553, Cl. 131-365.000.
Cole, Edward H., Jr., to Borg-Warner Corporation. Variable diameter pulley assembly. 4,453,923, Cl. 474-47.000.
Coleman, Howard R., to General Industries Company, The. Coil bobbin. 4,454,554, Cl. 361-41.000.
Coles Cranes Limited: *See—*
Thomasson, William R., 4,453,643, Cl. 212-184.000.
Colgate-Palmolive Company: *See—*
Lai, Kuo-Yann; Pierce, Robert C.; Dupre, Jean; and Killam, H. Scott, 4,454,060, Cl. 252-547.000.
Colgrove, Donald A.; Schoggen, Howard L.; and Wray, Kenneth D., to Procter & Gamble Company, The. Process for drying alcohols. 4,454,359, Cl. 568-916.000.
Colin, Gerard; and Reamot, Herve, to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques. Switching device for the electrical measurement of reactive impedances and a measuring bridge using such a switching device. 4,454,468, Cl. 323-365.000.
Collins, Arthur K.: *See—*
Srinivasan, Nallaswamy; Lijewski, Robert R.; Collins, Arthur K.; and Morse, Royal R., III, 4,454,507, Cl. 340-744.000.
Collins, Wayne H. Apparatus for and method of utilizing solar energy. 4,453,383, Cl. 60-641.120.
Combustion Engineering, Inc.: *See—*
Hayes, James K.; and Hayes, Lawrence R., 4,453,501, Cl. 122-510.000.
Sullivan, Robert P., 4,453,571, Cl. 138-171.000.
Waryasz, Richard E., 4,453,494, Cl. 122-4.00D.
Comer, Johnny. Mud pump liner and piston cleaner. 4,453,454, Cl. 92-87.000.
Comley, Jack W.: *See—*
Brint, Norman T.; and Comley, Jack W., 4,453,329, Cl. 42-15.000.
Commissariat a l'Energie Atomique: *See—*
Dupont, Yves; and Rocher, Christian, 4,454,032, Cl. 210-96.100.
Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines"C. G. Doris": *See—*
Sedillot, Francois G.; Hudson, William L.; and Castellan, Bernard, 4,453,859, Cl. 405-202.000.
Compton, J. Theodore: *See—*
Pilat, John F.; Wells, Douglas M.; Hamilton, Eric; and Compton, J. Theodore, 4,454,579, Cl. 364-200.000.
Conger, Robert P.: *See—*
Penta, Vincent L.; Boba, Joseph; Conger, Robert P.; and Charlton, Ralph W., 4,454,188, Cl. 428-172.000.
Congoleum Corporation: *See—*
Penta, Vincent L.; Boba, Joseph; Conger, Robert P.; and Charlton, Ralph W., 4,454,188, Cl. 428-172.000.
Conjerti, Samuel N.: *See—*
Groutage, Frederick D.; Conjerti, Samuel N.; and Shaw, Lockburn S., 4,453,426, Cl. 74-2.000.
Connolly, Jack. Bumper sticker holder. 4,453,328, Cl. 40-591.000.
Conoco Inc.: *See—*
Beck, Jeffrey L.; and El-Saie, Ahmed A., 4,453,864, Cl. 406-19.000.
Consolidated Foods Corporation: *See—*
DiTullio, Flavia, 4,453,549, Cl. 128-498.000.
Construction Fasteners, Inc.: *See—*
Hulsey, Tommy R., 4,453,361, Cl. 52-410.000.
Container Corporation of America: *See—*
Helms, Charles R.; Bousum, John V.; Walters, Richard T.; and Carr, William H., 4,453,630, Cl. 206-158.000.
Walter, Richard T., 4,453,628, Cl. 206-45.310.
Conterio, Eugene E.: *See—*
Conterio, Ruth H.; and Conterio, Eugene E., 4,454,037, Cl. 210-120.000.
Conterio, Ruth H.; and Conterio, Eugene E. Insulating jacket for an oil filter. 4,454,037, Cl. 210-120.000.
Contraves AG: *See—*
Gahwiler, Hermann; and Lorenz, Adrian, 4,453,934, Cl. 604-191.000.
Control Data Corporation: *See—*
Nystrom, Michael C., 4,454,581, Cl. 364-200.000.
Ritter, Rolland R., 4,454,466, Cl. 323-258.000.
Conway, Michael W.; and Norman, Lewis R., to Halliburton Company. Method of treating subterranean formations utilizing foamed viscous fluids. 4,453,596, Cl. 166-278.000.
Cook, G. Dennis: *See—*
Gulsby, Jerry G.; and Cook, G. Dennis, 4,453,958, Cl. 62-28.000.
Cook, John S., to Mattel, Inc. Musical rail rocker. 4,453,339, Cl. 446-227.000.
Cook, Michael A.; Curzons, Alan D.; and Wilkins, Robert B., to Beecham Group Limited. Clavulanic acid salts and their preparation from the tertiary butyl amine salt. 4,454,069, Cl. 260-245.300.
Cookson, Gleason O.: *See—*
Parham, Marc E.; Spearman, Stephen A.; and Cookson, Gleason O., 4,454,347, Cl. 564-428.000.
Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Blends of polyphenylene ether resins and styrene-tert-butylstryene copolymers. 4,454,271, Cl. 525-132.000.
Cooper Industries, Inc.: *See—*
Jameson, James J.; Mount, Fred L.; and Fernandez, Joe L., 4,453,830, Cl. 366-63.000.
Ledbetter, James A., 4,453,791, Cl. 339-29.00B.
Copolymer Rubber & Chemical Corp.: *See—*
Tsai, Tom C. H., 4,454,304, Cl. 525-210.000.
Copyer Kabushiki Kaisha: *See—*
Takasu, Yoshio; and Ishikawa, Shozo, 4,454,211, Cl. 430-59.000.
Corbett, John M.; and Bearden, Charles R., to Dow Chemical Company, The. Making cross-linked styrene polymer foam. 4,454,086, Cl. 264-53.000.
Corbett, Sydney C., to Hoklykem Holdings Limited. Spray treatment apparatus. 4,453,556, Cl. 134-65.000.
Cornell Research Foundation, Inc.: *See—*
Resler, Edwin L., Jr., 4,453,502, Cl. 123-1.00R.
Cornell, Robert W.; and Rex, Donald K., to International Business Machines Corporation. Forms feed tractor. 4,453,660, Cl. 226-74.000.
Corning Glass Works: *See—*
Berkey, George E., 4,453,961, Cl. 65-3.120.
Goepfert, Serge; Marsaud, Serge G.; Renault, Serge A. M.; and Roger, Francoise M. M., 4,454,170, Cl. 427-160.000.
Hoda, Syed N.; and Olszewski, Anthony R., 4,454,237, Cl. 501-2.000.
Taylor, Mark P., 4,453,981, Cl. 106-291.000.
Correcta, GmbH: *See—*
Gruber, Hermann; Wellner, Wolfgang; Diehl, Hermann; and Monig, Dieter, 4,453,358, Cl. 52-309.800.
Costantini, John J.; Weilbacker, Thomas O.; and Guglielmo, Joseph A., to Bendix Corporation, The. Linked data systems. 4,454,577, Cl. 364-200.000.
Cotchonis, N. Eugene: *See—*
Solheim, Karsten; and Cotchonis, N. Eugene, 4,453,717, Cl. 273-192.000.
Coughlan, Raymond T.; and Bojarski, Suzette M., to Daubert Coated Products Inc. Release coating compositions. 4,454,266, Cl. 524-44.000.
Couturier, Guy D.: *See—*
Belt, Ronald A.; and Couturier, Guy D., 4,454,590, Cl. 364-724.000.
Cowles, Dean S.: *See—*
Bush, Robert D.; and Cowles, Dean S., 4,454,562, Cl. 361-288.000.
Cowley, Keith. Roller assembly. 4,453,881, Cl. 414-534.000.
Coyne, James C., to Bell Telephone Laboratories, Incorporated. Heat removal from cabinets housing electronic equipment. 4,454,566, Cl. 361-386.000.
Cragoe, Edward J., Jr.: *See—*
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., 4,454,132, Cl. 424-250.000.
Cranford, H. Bruce, Jr.; Geasey, L. Thomas; and Arnold, Mark F., to United States of America, Army. Portable reclining examination chair. 4,453,768, Cl. 297-440.000.
Cremieux, George V. Fastener technology. 4,453,869, Cl. 411-38.000.
Cress, Allan K.; and Busse, Charles E., to Maryland Cup Corporation. Method and apparatus for producing finished foam plastic containers. 4,453,998, Cl. 156-350.000.
Creusot-Loire: *See—*
Binard, Jean, 4,454,407, Cl. 219-121.0EL.
Cristofori, Manlio; Borzatta, Valerio; and Morotti, Mauro, to Alfa Farmaceutici S.p.A. Nicotinates of alkanediols having hypolipidaemic activity and pharmaceutical compositions containing them. 4,454,145, Cl. 424-266.000.
Crosfield Electronics Limited: *See—*
Wayman, William G.; and Engelbert, Harald, 4,453,425, Cl. 74-2.000.
Crow, Robert P. Discrete address beacon, navigation and landing system (DABNLS). 4,454,510, Cl. 343-5.0GC.
Crown Zellerbach Corporation: *See—*
Reba, Imants, 4,453,709, Cl. 271-195.000.
Crozier, Ronald D. G. Alkyl xanthogen formate mixture as flotation agent. 4,454,051, Cl. 252-61.000.
Cubic Corporation: *See—*
Baylor, John T., 4,454,483, Cl. 331-11.000.
Cull, Neville L.: *See—*
Pine, Lloyd A.; and Cull, Neville L., 4,454,241, Cl. 502-68.000.
Cullen, Donald E., to United Technologies Corporation. Surface acoustic wave (SAW) pressure sensor structure. 4,454,440, Cl. 310-313.00R.
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., to Multiform Desiccants, Inc. Desiccant cartridge for laboratory desiccator. 4,453,955, Cl. 55-387.000.
Curiel, Yoram, to Foto Resources. Film transparency projector. 4,453,810, Cl. 353-55.000.
Curran, William V.; Sassiver, Martin L.; and Boothe, James H., to American Cyanamid Company. Derivatives of 3-(formylmethylthio)-propanoate. 4,454,336, Cl. 560-13.000.
Curti, Ezio. Automatic supporting plate loader. 4,453,873, Cl. 414-120.000.
Curzons, Alan D.: *See—*
Cook, Michael A.; Curzons, Alan D.; and Wilkins, Robert B., 4,454,069, Cl. 260-245.300.
Cyclops Corporation: *See—*
Ryan, Thomas G., 4,453,349, Cl. 52-28.000.
Czerlinski, George H. Coated magnetizable microparticles, reversible suspensions thereof, and processes relating thereto. 4,454,234, Cl. 436-526.000.
D.C. Society for Crippled Children, Inc.: *See—*
Frain, Joan M., 4,453,540, Cl. 128-134.000.

Dagenais, Jacques: *See—*
Dagenais, Roger J.; Dagenais, Jacques; and Poirier, Paul, 4,454,182, Cl. 428-74.000.

Dagenais, Roger J.; Dagenais, Jacques; and Poirier, Paul, to Location de Couches Hospitalieres Dagenais Ltd. Absorbent bed pad. 4,454,182, Cl. 428-74.000.

Dahlgren, Harold P.; Taylor, James E.; and Gardiner, John W. Inking systems. 4,453,463, Cl. 101-148.000.

Daicel Chemical Industries, Ltd.: *See—*
Okitsu, Kiyoshi; and Yamamoto, Akira, 4,454,313, Cl. 528-302.000.

Daimler-Benz Aktiengesellschaft: *See—*
Burchard, Hans; and Steinecke, Rudolf, 4,453,737, Cl. 280-725.000.
Filsinger, Reinhard, 4,453,516, Cl. 123-340.000.
Gmeiner, Gunter; and Krugener, Rolf, 4,454,390, Cl. 200-6.00A.
Perrin, Gunter; and Bergmann, Horst, 4,453,513, Cl. 123-279.000.
von der Ohe, Manfred; Flemming, Helmut; Siebelt, Dirk; Konig, Werner; and Solleder, Otto, 4,453,740, Cl. 280-781.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Okada, Fumio; Hirobe, Shunji; and Yamaguchi, Masayuki, 4,454,537, Cl. 358-77.000.

Dalrymple, Thomas H.; and Dunham, Hal I., to Dresser Industries, Inc. Mining method and system. 4,453,770, Cl. 299-7.000.

Damron, E. Bruce: *See—*
Voss, Stephen C.; Voss, John W.; and Damron, E. Bruce, 4,453,603, Cl. 175-53.000.

Danebo Parts and Equipment Inc.: *See—*
Myhre, Curth, 4,453,642, Cl. 212-78.000.

Daniele, Joseph J.: *See—*
Yip, Kwok L.; Hsing, To R.; Daniele, Joseph J.; and Ritter, Joachim A., 4,454,547, Cl. 358-293.000.

Daniels, Wiley E.; and Nagy, Dennis J., to Air Products and Chemicals, Inc. Complexes of N-methylolacrylamides with polyalkoxylates and polymerization to ungelled poly(N-methylolacrylamides). 4,454,286, Cl. 524-503.000.

Daniels, William R.; and Young, John S., to GTE Automatic Electric Inc. Arrangement for subscriber line verification and ring testing. 4,454,388, Cl. 179-175.20R.

Danielson, Richard J.; and Marquart, John E., to Roanwell Corporation. Handset hanger and switch. 4,454,387, Cl. 179-146.00R.

Dansk Industri Syndikat A/S: *See—*
Jespersen, Emil; and Singh, Bakshi B., 4,453,586, Cl. 164-37.000.

Darmouni, Corinne, to Thomson-CSF. Odd order self-corrected electric filters. 4,454,487, Cl. 333-28.00R.

Dashevsky, Grigory I.: *See—*
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury L.; Dashevsky, Grigory I.; Iovlev, Vladimir A., 4,453,916, Cl. 432-197.000.

Data General Corporation: *See—*
Pilat, John F.; Wells, Douglas M.; Hamilton, Eric; and Compton, J. Theodore, 4,454,579, Cl. 364-200.000.

Daubert Coated Products Inc.: *See—*
Coughlan, Raymond T.; and Bojarski, Suzette M., 4,454,266, Cl. 524-44.000.

Davis, James S., to Struthers Wells Corporation. Augmented heat transfer method and apparatus. 4,453,497, Cl. 122-4.00D.

Davis, Joseph; and White, Richard T., to United Technologies Corporation. Bearing support structure. 4,453,783, Cl. 308-184.00R.

Dawans, Francois; Binet, Daniel; Kohler, Norbert; and Vu, Quang D., to Institut Francais du Petrole. Stable suspensions of water-soluble polymers and their manufacture. 4,454,260, Cl. 523-130.000.

Dawson, Marcia I.; Hobbs, Peter D.; and Derdzinski, Krzysztof A., to SRI International. Naphthyl or tetrahydronaphthyl-substituted naphthoic acid and derivatives. 4,454,341, Cl. 560-100.000.

Day, Robert E.: *See—*
Hale, William H.; and Day, Robert E., 4,454,411, Cl. 235-95.00R.

Dayco Corporation: *See—*
Foster, Randy C.; and Gayer, Melvin D., 4,454,236, Cl. 474-135.000.
Kleykamp, Donald L.; McCord, Steven G.; LiVolsi, William J.; and Trueblood, Raymond L., 4,453,289, Cl. 24-20.01TT.

DBX, Inc.: *See—*
Welland, David R., 4,454,433, Cl. 307-493.000.

De La Rue Giori S.A.: *See—*
Kuhfuss, Runwalt, 4,453,707, Cl. 270-60.000.

Deaver, Dann T. Louver construction. 4,453,762, Cl. 296-97.00A.

DeBruler, Gregory, to Energy Innovations, Ltd. Apparatus for treating the crankcase vapor emissions of internal combustion engines. 4,453,525, Cl. 123-573.000.

Dechow, Frederick J.; and Stobby, William G., to Dow Chemical Company, The. Isocyanurate/imide cross-linked resins and foams. 4,454,257, Cl. 521-157.000.

Decker, William D., to Sonoco Products Company. Tampon insertion device. 4,453,925, Cl. 604-14.000.

De Coene, Frans J. G. C., to Sperry Corporation. Crop gathering attachment for crop harvesting machine. 4,453,373, Cl. 56-14.600.

Deere & Company: *See—*
Allen, James R.; and Myers, Christopher A., 4,453,614, Cl. 180-139.000.
Hauk, Klaus, 4,453,895, Cl. 417-422.000.
Kuhn, John B., 4,453,374, Cl. 56-320.100.
Rabe, David L.; and Hudson, Colin M., 4,453,460, Cl. 100-73.000.

DeFrees, Joseph H., to Allegheny Valve Company. Stuffing box with O-ring detent for control mechanism of emergency valve. 4,453,698, Cl. 251-144.000.

Degussa Aktiengesellschaft: *See—*
Kittelmann, Udo; Diehl, Manfred; Bergmann, Roland; and Stadtmuller, Gunter, 4,454,056, Cl. 252-174.150.

Deike, Karl-Heinz: *See—*
Bergemann, Klaus-Dieter; Kiel, Bernd-Joachim; Konig, Heinz-Werner; and Deike, Karl-Heinz, 4,453,736, Cl. 280-711.000.

DeLacy, James P., to Brown Boveri Electric, Inc. Voltage sensing and load measuring automatic reclosing system for d-c circuit breakers. 4,454,555, Cl. 361-59.000.

de Lozanne, Alejandro L., to Leland Stanford Junior University, The Board of Trustees of the. Microbridge superconducting device having support with stepped parallel surfaces. 4,454,522, Cl. 357-5.000.

Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Container filling system. 4,453,575, Cl. 141-83.000.

Delta Technology Corporation: *See—*
Codding, Elias H., 4,454,029, Cl. 209-581.000.

DeLucia, Victor E. Modular X-ray inspection apparatus. 4,454,605, Cl. 378-57.000.

DeMarchi, Andrea. Atomic or molecular beam frequency standard with optical pumping and open resonator. 4,454,482, Cl. 331-3.000.

DeMasi, Dominick F.; and Scheideler, Gregg S., to Lever Brothers Company. Dispersion of hydrophilic gums to form non-swelling aqueous alcoholic mixtures. 4,453,979, Cl. 106-188.000.

Demidovich, Evgeny A.: *See—*
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.

Deming, William A.: *See—*
Mosiman, Charles A.; and Deming, William A., 4,453,315, Cl. 33-181.0AT.

Demirel, Turgut; and Enustun, Bekir V., to Iowa State University Research Foundation, Inc. Ice porosimeter. 4,453,398, Cl. 73-38.000.

Demopoulos, Harry B. Dry powder formulations having improved flow and compressibility characteristics, and method for the preparation thereof. 4,454,125, Cl. 424-201.000.

Demuth, Martin; and Schaffner, Kurt, to Studiengesellschaft Kohle mbH. Pure enantiomers of bicyclo[2.2.2]oct-5-en-2-ones, processes for their production and their use. 4,454,352, Cl. 568-374.000.

Denda, Masahiko: *See—*
Abe, Haruhiko; Harada, Hiroshi; Kinoshita, Shigeji; Hirata, Yoshihiro; Denda, Masahiko; and Akasaka, Yoichi, 4,454,166, Cl. 427-85.000.

Denney, Jerry W., to American Monitor Corporation. Assay method and reagent composition for the determination of magnesium. 4,454,230, Cl. 436-74.000.

Dennhardt, Werner, to Hoechst Aktiengesellschaft. Mechanism for transporting and positioning printing masters. 4,453,708, Cl. 271-8.00A.

Denton, John D. Counter deflection torque device. 4,453,885, Cl. 415-63.000.

DePuy, Robert P., to General Electric Company. Timing controller for a recloser relay. 4,454,556, Cl. 361-73.000.

Derdzinski, Krzysztof A.: *See—*
Dawson, Marcia I.; Hobbs, Peter D.; and Derdzinski, Krzysztof A., 4,454,341, Cl. 560-100.000.

de Ruiter, Ernest: *See—*
von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest, 4,454,191, Cl. 428-244.000.

Desai, Natvarlal B.: *See—*
Lowicki, Norbert; and Desai, Natvarlal B., 4,454,153, Cl. 424-289.000.

DeSalve, Dennis W.: *See—*
Mort, Charles B.; and DeSalve, Dennis W., 4,453,301, Cl. 29-157.30C.

Desbois, Michel, to Rhone-Poulenc Specialities Chimiques. Process for the acylation of halo- or trihalomethylbenzenes. 4,454,350, Cl. 568-319.000.

Desmet, Maccalleen C.: *See—*
Castelli, Joseph T.; and Desmet, Maccalleen C., 4,453,541, Cl. 128-158.000.

DeSoto, Inc.: *See—*
Tortorello, Anthony J.; and Roberts, Donald R., 4,454,265, Cl. 523-420.000.

Detroit Reamer and Tool Company: *See—*
Andreasson, Donald C., 4,453,694, Cl. 248-559.000.

Detsch, Anton: *See—*
Hipp, Karl H.; and Detsch, Anton, 4,453,741, Cl. 280-801.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Frequency modulator for an electronic musical instrument. 4,453,441, Cl. 84-1.220.

Deutsch, Robert W.: *See—*
Martinsons, Robert; and Deutsch, Robert W., 4,453,514, Cl. 123-327.000.

Deutsche Babcock Bau GmbH: *See—*
Ploger, Heinz, 4,453,475, Cl. 110-336.000.

Diamond Shamrock Corporation: *See—*
Hinden, Jean; Katz, Michael; and Gauger, Jurgen, 4,454,169, Cl. 427-125.000.

Diddens, Paul A.: *See—*
Braschler, Boyce D.; Diddens, Paul A.; Erickson, Roger D.; and O'Toole, Charles J., Jr., 4,454,520, Cl. 346-153.100.

Diehl, Hermann: *See*—
Gruber, Hermann; Wellner, Wolfgang; Diehl, Hermann; and Monig, Dieter, 4,453,358, Cl. 52-309.800.
Diehl, Manfred: *See*—
Kittelmann, Udo; Diehl, Manfred; Bergmann, Roland; and Stadtmuller, Gunter, 4,454,056, Cl. 252-174.150.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Isocyanatoaryl sulphochlorides. 4,454,071, Cl. 260-453.00P.
Dietrich, Robert F.; and Gay, Walter A., to Uniroyal, Inc. Process for producing pentachloronitrobenzene. 4,454,362, Cl. 568-938.000.
Diggle, Edmund A., Jr.; and Cecere, Andrew P., to Samcoe Holding Corporation. Method for wet processing, drying and moisture conditioning tubular knitted fabric. 4,454,171, Cl. 427-209.000.
Dilling, Peter; and Sarjeant, Peter T., to Westvaco Corporation. Reduction of lignin color. 4,454,066, Cl. 260-124.00R.
DiMenna, William S.; and DiSanzo, Carmine P., to FMC Corporation. Nematicidal 2-chloro-5-aryl-1,3,4-thiadiazoles. 4,454,147, Cl. 424-270.000.
Dinger, Hans, to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH. Internal combustion engine with an exhaust gas turbocharger. 4,453,381, Cl. 60-612.000.
DiSanzo, Carmine P.: *See*—
DiMenna, William S.; and DiSanzo, Carmine P., 4,454,147, Cl. 424-270.000.
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, to Chemische Werke Huls Aktiengesellschaft. Process for the trimerization of diisocyanates. 4,454,317, Cl. 544-193.000.
DiTullio, Flavia, to Consolidated Foods Corporation. Brassiere. 4,453,549, Cl. 128-498.000.
DiVito, Fred. Lift chair for disabled person. 4,453,766, Cl. 297-316.000.
Dr. Carl Hahn, G.m.b.H.: *See*—
Friese, Axel, 4,453,296, Cl. 28-119.000.
Dr.-Ing. Ludwig Muller & Sohne-Gesellschaft fur Bautechnik mbH & Co. KG, Firma: *See*—
Betz, Ferdinand, 4,453,622, Cl. 188-265.000.
Dr. Karl Thomae GmbH: *See*—
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.
Doggett, Roger H.; and Shanley, Edward S., to Knomark, Inc. Chemical dispenser. 4,453,278, Cl. 4-228.000.
Doi, Tsuneo: *See*—
Hayashi, Motoshige; Tanaka, Shigetoshi; Yoshii, Motokazu; and Doi, Tsuneo, 4,454,087, Cl. 264-53.000.
Donan, David C., Jr. Base thrust anchor shell assembly. 4,453,845, Cl. 405-259.000.
Donazzan, Amedeo; and Pome, Enzo, to TELETTRA - Telefonia Elettronica e Radio S.p.A. Temperature stabilized microwave cavities. 4,454,489, Cl. 333-227.000.
Donetsky Politekhnichesky Institut: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
Donkle, Lucius B., Jr.: *See*—
Rasmussen, George E.; and Donkle, Lucius B., Jr., 4,453,641, Cl. 211-151.000.
Donzis, Byron A., to American Pneumatics Co. Protective garment. 4,453,271, Cl. 2-2.000.
Dorcheus, Samuel H., to Envirotech Corporation. Solids-liquids separation device. 4,454,042, Cl. 210-401.000.
Dover Corporation: *See*—
Wilder, Paul R., 4,453,578, Cl. 141-209.000.
Dow Chemical Company, The: *See*—
Althouse, James W., III, 4,453,829, Cl. 366-13.000.
Corbett, John M.; and Bearden, Charles R., 4,454,086, Cl. 264-53.000.
Dechow, Frederick J.; and Stobby, William G., 4,454,257, Cl. 521-157.000.
McKinney, Osborne K.; and Flores, David P., 4,454,272, Cl. 524-241.000.
Wallace, Steven L.; Griffin, Freddie, Jr.; and Tvedt, Thorwald J., Jr., 4,454,046, Cl. 210-698.000.
Dow Corning Corporation: *See*—
Lee, Kenneth M.; and Ulman, Katherine L., 4,454,288, Cl. 524-588.000.
Dowbenko, Rostyslaw: *See*—
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and Christenson, Roger M., 4,454,274, Cl. 524-157.000.
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Kawamura, Yoshihisa; and Dozono, Kichihiko, 4,453,379, Cl. 60-278.000.
Dresser Industries, Inc.: *See*—
Claycomb, Jack R., 4,454,598, Cl. 367-83.000.
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DuBois, Grant E., to Dynapol. Stevioside analogs. 4,454,290, Cl. 536-18.100.
Dubovik, Anatoly S.: *See*—
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury L.; Dashevsky, Grigory I.; and Iovlev, Vladimir A., 4,453,916, Cl. 432-197.000.
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Teich, Wesley W.; and Dudley, Kenneth W., 4,454,403, Cl. 219-10.55E.
Dueber, Thomas E.; and Link, William J., deceased (by Link, Elizabeth T., executrix), to Du Pont de Nemours, E. I., and Company. N-Alkylindolylidene and N-alkylbenzo-thiazolylidene alkanones as sensitizers for photopolymer compositions. 4,454,218, Cl. 430-277.000.
Duel International Stationary Co., Ltd.: *See*—
Purcocks, Dale M, 4,453,850, Cl. 402-4.000.
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Icenbice, Howard, 4,453,673, Cl. 239-236.000.
Duffin, Lawrence H., Jr.: *See*—
Icenbice, Howard, 4,453,673, Cl. 239-236.000.
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Buckfelder, John J.; and Schleinitz, Henry M., 4,454,176, Cl. 427-246.000.
Dueber, Thomas E.; and Link, William J., deceased, 4,454,218, Cl. 430-277.000.
Fritz, Herbert L., 4,454,168, Cl. 427-96.000.
Goff, David L., 4,454,220, Cl. 430-311.000.
Gorondy, Emery J., 4,453,492, Cl. 118-623.000.
Grot, Walther G., 4,453,991, Cl. 156-94.000.
Lepone, Gerald E., 4,454,135, Cl. 424-245.000.
Levitt, George; Yeh, Chin-Lung; and Budzinski, John C., 4,453,970, Cl. 71-93.000.
Levitt, George, 4,453,971, Cl. 71-93.000.
Levitt, George, 4,454,335, Cl. 560-12.000.
McCormack, William B., 4,454,360, Cl. 568-936.000.
Pace, Salvatore J., 4,454,007, Cl. 204-1.00T.
Resnick, Paul R., 4,454,247, Cl. 521-27.000.
Sauers, Richard F., 4,454,334, Cl. 560-12.000.
Sharps, David L., 4,453,867, Cl. 366-98.000.
Welter, James J., 4,454,223, Cl. 430-533.000.
Dupont, Yves; and Rocher, Christian, to Commissariat a l'Energie Atomique. Fast filtering apparatus. 4,454,032, Cl. 210-96.100.
Dupre, Jean: *See*—
Lai, Kuo-Yann; Pierce, Robert C.; Dupre, Jean; and Killam, H. Scott, 4,454,060, Cl. 252-547.000.
Durand, Philip E.; and McManus, Lawrence R., to United States of America, Army. Protective helmet. 4,453,277, Cl. 2-416.000.
Durckheimer, Walter: *See*—
Mencke, Burkhard; Ehlers, Eberhard; Blumbach, Jurgen; Durckheimer, Walter; and Seeger, Karl, 4,454,129, Cl. 424-246.000.
Durden, John A., Jr., to Union Carbide Corporation. Amide carbamates and amide oxime compounds. 4,454,134, Cl. 424-244.000.
Durual, Pierre: *See*—
Kervennal, Jacques; Cognion, Jean-Marie; and Durual, Pierre, 4,454,322, Cl. 548-221.000.
Duschl, Robert A., to RCA Corporation. Charge coupled device based blemish detection system and method. 4,454,541, Cl. 358-106.000.
Duschl, Robert A., to RCA Corporation. Charge coupled device based inspection system and method. 4,454,545, Cl. 358-213.000.
Dynamic Resources Unlimited, Inc.: *See*—
Hoffman, Craig A.; and Lawrence, William D., 4,453,326, Cl. 40-377.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Brachert, Heinrich; and Homburg, Axel, 4,453,860, Cl. 405-259.000.
Dynapol: *See*—
DuBois, Grant E., 4,454,290, Cl. 536-18.100.
E. W. Buschman Co., The: *See*—
Wilkins, John J., 4,453,627, Cl. 198-781.000.
E. W. Watchorn & Associates, Inc.: *See*—
Watchorn, Ernest W., 4,453,488, Cl. 114-266.000.
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Heitz, William D.; Ealer, George E.; and Cieloszyk, Gary S., 4,454,231, Cl. 524-399.000.
Earth Chemical Company, Limited: *See*—
Mori, Kenji, 4,453,967, Cl. 71-88.000.
Easterly, Herbert. Tire and wheel assembly with a shield for tire flaps. 4,453,581, Cl. 152-349.000.
Eastman Kodak Company: *See*—
Brien, Gerald J.; and Hall, Jeffrey L., 4,454,224, Cl. 430-393.000.
Falling, Stephen N.; and Wilson, Alan K., 4,454,340, Cl. 560-56.000.
Smith, Donald W., 4,453,821, Cl. 355-14.00C.
Torpey, William A., 4,453,659, Cl. 226-20.000.
Eaton Corporation: *See*—
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Eberlein, Wolfgang: *See*—
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Eckert, William. Arrow rest. 4,453,528, Cl. 124-41.00A.
Economaki, George. Grease fitting cover and locator. 4,453,618, Cl. 184-105.00B.
Edging, Thomas E.: *See*—
Benjamin, Robert E.; and Edging, Thomas E., 4,454,103, Cl. 423-309.000.
Edwardson, Svante R., to AB Dentatus. Articulator for use in making dentures of parts thereof. 4,453,918, Cl. 433-55.000.

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Rousseau, Alain; and Ramel, Francois, 4,453,418, Cl. 73-861.580.
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Ehlers, Eberhard: *See*—
Mencke, Burkhard; Ehlers, Eberhard; Blumbach, Jurgen; Durckheimer, Walter; and Seeger, Karl, 4,454,129, Cl. 424-246.000.
Eide Industries, Inc.: *See*—
Ochs, George K.; and Eide, John R., 4,453,558, Cl. 135-106.000.
Eide, John R.: *See*—
Ochs, George K.; and Eide, John R., 4,453,558, Cl. 135-106.000.
Eisai Co., Ltd.: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,454,330, Cl. 549-420.000.
Yamatsu, Isao; Inai, Yuichi; Suzuki, Takeshi; Abe, Shinya; Satoh, Masaru; and Seto, Naosuke, 4,454,126, Cl. 424-212.000.
Ekman, Kjell R. Quick-coupling member. 4,453,748, Cl. 285-316.000.
Ele, John H. Printed wiring board inspection, work logging and information system. 4,454,585, Cl. 364-507.000.
Electric Power Research Institute, Inc.: *See*—
Appleby, Anthony J., 4,454,372, Cl. 136-250.000.
Bedell, John R., 4,453,654, Cl. 222-594.000.
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Electrodyne Research Corporation: *See*—
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Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.
Elliott, Jo A.: *See*—
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Elliott, Leonard G., to Glaxo Group Limited. Dispensing of liquids. 4,453,574, Cl. 141-5.000.
Ellis, Warren K.; and Chadwick, Donald T., to Northern Telecom Limited. Adjustable mounting. 4,453,689, Cl. 248-288.100.
Elmis, Herbert; and Klar, Adrian, to ITT Industries, Inc. Digital circuit for providing a binary signal on the occurrence of a predetermined frequency ratio of two signals. 4,454,531, Cl. 358-17.000.
El-Saie, Ahmed A.: *See*—
Beck, Jeffrey L.; and El-Saie, Ahmed A., 4,453,864, Cl. 406-19.000.
Emerson Electric Co.: *See*—
Hochstatter, Brian R., 4,453,691, Cl. 248-542.000.
Mang, Josef, 4,453,882, Cl. 414-728.000.
Emhart Industries, Inc.: *See*—
Larson, John P.; and Japenga, Robert J., 4,453,963, Cl. 65-29.000.
Pearce, Godfrey R.; and Evans, William J., 4,454,561, Cl. 361-275.000.
Emmerich, Kenneth C., to Fansteel Inc. Unitized drill steel and method of manufacturing. 4,453,854, Cl. 29-520.000.
Empi, Inc.: *See*—
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,453,548, Cl. 128-421.000.
Energiagazdalkodasi Intezet: *See*—
JUhasz, Mihaly, 4,453,498, Cl. 122-136.00R.
Energy Conversion Devices, Inc.: *See*—
Lewis, Gary D., 4,453,822, Cl. 355-43.000.
Energy Innovations, Ltd.: *See*—
DeBruler, Gregory, 4,453,525, Cl. 123-573.000.
Engelbert, Harald: *See*—
Wayman, William G.; and Engelbert, Harald, 4,453,425, Cl. 74-2.000.
Engelbrecht, Horst P.; and Weetman, Ronald J., to General Signal Corporation. Mixing systems having agitators for mixing gas with liquid. 4,454,078, Cl. 261-93.000.
Engelke, Roger P., to Barber-Colman Company. Device for sensing the volmetric flow rate of air in a duct. 4,453,419, Cl. 73-861.660.
English, George J.; Rothwell, Harold L., Jr.; and Keeffe, William M., to GTE Products Corporation. Vertical running, high brightness, low wattage metal halide lamp. 4,454,450, Cl. 313-620.000.
Englund, Arnold: *See*—
Schibbye, Lars; and Englund, Arnold, 4,453,900, Cl. 418-99.000.
Englund, Erik. Hull of a boat, provided with keel and rudder. 4,453,484, Cl. 114-143.000.
Ensign, John D. Electronic body temperature indicator. 4,453,552, Cl. 128-736.000.
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Enustun, Bekir V.: *See*—
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Williams, Charles G. D., 4,453,337, Cl. 43-131.000.
Envirotech Corporation: *See*—
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Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,454,164, Cl. 426-549.000.
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Eriksson, Sune; and Bjorling, Gotthard, to SKF Steel Engineering AB. Method of separating iron and its alloy metals from fine-grained crude oxidic products. 4,454,013, Cl. 204-112.000.
Erlandsson, Kjell I., to Kelley Company, Inc. Liquid waste feeding system for an incinerator. 4,453,476, Cl. 110-346.000.
Eroskey, Richard E., to B. F. Goodrich Company, The. Vinyl chloride polymer plastisol composition. 4,454,263, Cl. 523-400.000.
Escher Wyss Aktiengesellschaft: *See*—
Hemmi, Rolander, 4,453,299, Cl. 29-116.0AD.
ESCO Corporation: *See*—
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Evans, David W., to United States of America, Air Force. Real-time optical filtering system with spatial and temporal enhancement of visual information. 4,453,804, Cl. 350-162.120.
Evans, John M.: *See*—
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Evans, William J.: *See*—
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Exxon Research and Engineering Co.: *See*—
Fung, Shun C., 4,454,246, Cl. 502-213.000.
Johnson, Jack W., 4,454,061, Cl. 252-625.000.
Luebbe, Ray H., Jr., 4,454,194, Cl. 428-323.000.
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,454,353, Cl. 568-454.000.
Pine, Lloyd A.; and Cull, Neville L., 4,454,241, Cl. 502-68.000.
Singhal, Gopal H.; and Stuntz, Gordon F., 4,454,024, Cl. 208-111.000.
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Penverne, Albert; and Gobeaux, Pierre W., 4,453,735, Cl. 280-690.000.
Faatz, Otto, to Toschi Produktions-GmbH. Condensation process for separating air pollutants from waste gases, and specifically from flue gases. 4,454,100, Cl. 423-210.000.
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, to Snamprogetti S.p.A. Recovering condensables from natural gas. 4,453,956, Cl. 62-18.000.
Fadeipca International, Corp.: *See*—
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Fahey, Robert J.; and Resnick, Martin L., to United Telecommunications, Inc. Apparatus for monitoring and signalling system. 4,454,502, Cl. 340-507.000.
Fahrzeugbau Haller GmbH: *See*—
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Falling, Stephen N.; and Wilson, Alan K., to Eastman Kodak Company. Preparation of aryl 1-hydroxyaryl-2-carboxylates. 4,454,340, Cl. 560-56.000.
Fansteel Inc.: *See*—
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Farcasiu, Malvina; and Forbus, Thomas R., to Mobil Oil Corporation. Methods for the improvement of transalkylation reactions among benzenoid species. 4,454,364, Cl. 585-470.000.
Fasching, George E., to United States of America, Energy. Air-flow regulation system for a coal gasifier. 4,453,948, Cl. 48-76.000.
Fasching, George E.; and Rotunda, John R., to United States of America, Energy. Ash bed level control system for a fixed-bed coal gasifier. 4,453,949, Cl. 48-77.000.
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Faulkner, Albert A.; and Bouton, John C. System for handling slides. 4,453,807, Cl. 350-529.000.
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Fehr, Charles, to Firmenich SA. Lactonic derivatives and use of same as starting materials for the preparation of macrocyclic hydroxyketones. 4,454,351, Cl. 568-347.000.
Fehr, Werner, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Air-conditioning apparatus for motor vehicles. 4,453,591, Cl. 165-42.000.
Feist, Horst J. Process to impregnate the carbon consisting objects. 4,454,177, Cl. 427-294.000.
Felburn, J. Phil. Panel-sided vehicle convertible to flatbed vehicle. 4,453,761, Cl. 296-43.000.
Feldstein, Robert S. Emergency lighting system. 4,454,452, Cl. 315-86.000.
Felix, Raymond A., to Stauffer Chemical Company. O,O-dialkyl-N-phosphonomethyl-N-halomethyl acetamide. 4,454,063, Cl. 260-944.000.
Fenton, Donald M., to Union Oil Company of California. Arsenic removal method. 4,454,027, Cl. 208-253.000.
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Fernandez, Manuel J. Protective shield for a felt tip pen. 4,453,849, Cl. 401-193.000.
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Ferone, Gabriel; and Ferone, Ferdinand. Installation for converting the energy of the oceans. 4,453,894, Cl. 417-332.000.
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Ferrieu, Gilbert M. M.; Hetet, Yves J. F.; and Balch, Jacques Y., to Telecommunications Radioelectriques et Telephoniques T.R.T. Hands free telephone with switchable gain in the two speech signal paths. 4,454,384, Cl. 179-81.00B.
Ferris, Theodore V.; and Kmetz, Richard C., to Monsanto Company. Manufacture of aqueous formaldehyde. 4,454,354, Cl. 568-473.000.
Fiat Auto S.p.A.: *See—*
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Streeter, Robert T.; and Carl, David F., 4,453,451, Cl. 91-28.000.
Fickel, Walter; and Ries, Gerhard, to Akzo nv. Porous, powdery polypropylene. 4,454,198, Cl. 428-402.000.
Fidrych, Alfred W., to Harvey Hubbell Incorporated. Grip for pulling fiber optic cable. 4,453,291, Cl. 24-115.00N.
Field, George D. Woodburning stove. 4,453,531, Cl. 126-61.000.
Field, Robert D. Feed auger attachment. 4,453,375, Cl. 56-364.000.
Fields, Marvin C.: *See—*
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Findlay, Hugh T.; and Jones, Keith A., to International Business Machines Corporation. Laminated thermal transfer medium for lift-off correction and embodiment with resistive layer composition including lubricating contact graphite coating. 4,453,839, Cl. 400-120.000.
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Hill, James W.; and Finley, Eugene N., 4,453,809, Cl. 352-11.000.
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Lawson, David F., 4,454,280, Cl. 524-398.000.
Schlemmer, Robert, 4,454,000, Cl. 156-502.000.
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Fehr, Charles, 4,454,351, Cl. 568-347.000.
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Varnum, Gerald F.; and Wiklund, David E., 4,453,559, Cl. 137-85.000.
Fisher, Eldon M., to United States of America, Army. Low distortion FET oscillator with feedback loop for amplitude stabilization. 4,454,485, Cl. 331-109.000.
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Lindau, Leif V.; and Ahman, Stefan O. H., 4,454,102, Cl. 423-244.000.
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Bennett, Richard E.; and Flatt, Donald V., 4,454,179, Cl. 428-41.000.
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Florence, David M.; and Smith, Wayne E., to Armstrong World Industries, Inc. Low density cellular polyvinyl chloride. 4,454,250, Cl. 521-75.000.
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McKinney, Osborne K.; and Flores, David P., 4,454,272, Cl. 524-241.000.
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Adkisson, James W.; and Ishman, Paul A., 4,453,848, Cl. 400-661.000.
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Brown, Richard A.; Caropreso, Frank E.; Lymburner, Charles J.; and Norris, Robert D., 4,453,597, Cl. 166-303.000.
DiMenna, William S.; and DiSanzo, Carmine P., 4,454,147, Cl. 424-270.000.
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Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
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Farcasiu, Malvina; and Forbus, Thomas R., 4,454,364, Cl. 585-470.000.
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Kathiria, Shabbir A., 4,453,759, Cl. 296-37.800.
Smith, Terrence; Moore, Thomas S.; and Helmers, Earl L., 4,453,778, Cl. 303-22.00R.
Wade, Wallace R., 4,453,527, Cl. 123-669.000.
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Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, 4,454,110, Cl. 424-54.000.
Hillman, Jeffrey D., 4,454,109, Cl. 424-50.000.
Fortier, Larry: *See—*
Serra, Gilbert M.; Fortier, Larry; and Valentino, Ernest N., 4,453,857, Cl. 405-128.000.
Foster, Randy C.; and Gayer, Melvin D., to Dayco Corporation. Belt tensioner and method of making same. 4,454,236, Cl. 474-135.000.
Foto Resources: *See—*
Curiel, Yoram, 4,453,810, Cl. 353-55.000.
Fox, Daniel J.: *See—*
Angus, William G.; Rathe, Richard D.; and Fox, Daniel J., 4,453,620, Cl. 188-112.00R.
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Frain, Joan M., to D.C. Society for Crippled Children, Inc. Positioning structure for handicapped person. 4,453,540, Cl. 128-134.000.

Fraioli, Anthony V.; and Young, John E., to United States of America, Energy. Steam reforming of fuel to hydrogen in fuel cells. 4,454,207, Cl. 429-17.000.

Franks, Charles G., to Ingersoll-Rand Company. Concentric shaft drive. 4,453,625, Cl. 192-88.00B.

Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., to PPG Industries, Inc. Pressing plastic with extensible coating. 4,454,203, Cl. 428-520.000.

Fredd, John V., to Otis Engineering Corporation. Method and apparatus for controlling a well. 4,453,599, Cl. 166-374.000.

Freeburn, Edwin J. Cooling device. 4,453,503, Cl. 123-41.310.

Freeman, Lawrence M.; and Simpson, Donald A., to Germicidal Electronics, Inc. Single piston, double chambered reciprocal internal combustion engine. 4,453,504, Cl. 123-52.00B.

Frezza, William A.: *See*—
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Frias, Robert; Cain, Troy D.; Gallagher, John J., Jr.; and Watson, William, to Ingram Corporation. Handling apparatus for pipe and other tubulars. 4,453,872, Cl. 414-22.000.

Friese, Axel, to Dr. Carl Hahn, G.m.b.H. Apparatus for pressing workpieces of absorbent material, particularly tampons for feminine hygiene. 4,453,296, Cl. 28-119.000.

Frisch, Kurt C.; and Baumann, Heinz, to Schaum-Chemie Wilhelm Bauer GmbH & Co. KG. Polyurea foams prepared from isocyanate, water, and a lower-alkanol. 4,454,251, Cl. 521-107.000.

Fritz, Herbert L., to Du Pont de Nemours, E. I., and Company. Printed circuits prepared from metallized photoadhesive layers. 4,454,168, Cl. 427-96.000.

Frontier Plastics (South Wales) Limited: *See*—
Harris, John; and Anthony, John E., 4,453,648, Cl. 220-324.000.

Fryda, Georg: *See*—
Bruckl, Konrad; and Fryda, Georg, 4,453,293, Cl. 24-131.00C.

Fuji Heavy Industries, Ltd.: *See*—
Usui, Toshihiro; and Inomoto, Kiyoshi, 4,453,645, Cl. 220-22.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Nakamura, Mitsuo; and Matsui, Fujio, 4,453,518, Cl. 123-361.000.
Toshio, Takano, 4,453,429, Cl. 74-688.000.

Fuji Photo Film Co., Ltd.: *See*—
Komine, Shigeo; Morita, Kazuhiko; and Tsuji, Nobuo, 4,454,202, Cl. 428-423.100.
Mori, Sumio, 4,454,546, Cl. 358-260.000.
Oosaka, Shigenori; and Tozaki, Katutosi, 4,454,519, Cl. 346-140.00R.
Sakai, Nobuo; Seoka, Yoshio; and Aoki, Kozo, 4,454,225, Cl. 430-505.000.

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Harada, Yuho; Maruyama, Tsutomu; Kumakura, Yoshiyuki; and Kuwayama, Shigeo, 4,453,962, Cl. 65-3.150.

Fuji Xerox Co., Ltd.: *See*—
Moriguchi, Haruhiko; Ohmori, Takashi; and Inui, Toshiharu, 4,454,516, Cl. 346-76.0PH.

Fujii, Masaki; and Miyabayashi, Mitsutaka, to Mitsubishi Petrochemical Company, Ltd. Olefinic block copolymer and crosslinked product thereof. 4,454,306, Cl. 525-323.000.

Fujii, Setsuro; Okutome, Toshiyuki; Nakayama, Toyoo; Yaegashi, Takashi; and Kurumi, Masateru, to Torii & Co., Ltd. Amidine compound. 4,454,338, Cl. 560-34.000.

Fujikura Cable Works, Limited, The: *See*—
Takaoka, Michio; Ono, Motoyuki; and Kaji, Isao, 4,454,375, Cl. 174-73.00R.

Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, to Takeda Chemical Industries, Ltd. Triisocyanates and their production and use. 4,454,296, Cl. 528-75.000.

Fujisawa, Fumio: *See*—
Sato, Kazuo; Takasumi, Masakazu; Shiohata, Kouki; Ohmori, Motoji; Shiga, Motohiro; and Fujisawa, Fumio, 4,453,407, Cl. 73-462.000.

Fujitsu Limited: *See*—
Fujiwara, Yoshiro; Yamada, Sumio; Hoshino, Hiroshi; and Wakatsuki, Noboru, 4,454,444, Cl. 310-360.000.
Miyashita, Takumi, 4,454,571, Cl. 363-60.000.
Wada, Kunihiko; and Nakano, Motoo, 4,454,525, Cl. 357-23.000.
Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,454,213, Cl. 430-76.000.

Fujiwara, Yoshiro; Yamada, Sumio; Hoshino, Hiroshi; and Wakatsuki, Noboru, to Fujitsu Limited. $LiTaO_3$ Piezoelectric resonator. 4,454,444, Cl. 310-360.000.

Fukata, Shunsuke, to Toray Industries, Inc. Sheet of polyphenylene sulfide filaments and process for producing the same. 4,454,189, Cl. 428-224.000.

Fukayama, Miyoji; and Ishida, Tadao, to Toray Silicone Company, Ltd. Room temperature curable polyorganosiloxane composition containing spindle shaped calcium carbonate. 4,454,262, Cl. 523-210.000.

Fukuda, Kazumasa; and Kitahara, Yoshimi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,454,195, Cl. 428-336.000.

Fukushi, Kazue, to Mitsubishi Chemical Industries Limited. Therapeutic agents. 4,454,119, Cl. 424-170.000.

Fulton, Fred J.; Honodel, Charles A.; Holman, William R.; and Weingart, Richard C., to United States of America, Energy. Method and apparatus for generating a natural crack. 4,453,423, Cl. 73-863.000.

Funakoshi, Takashi: *See*—
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,454,258, Cl. 523-116.000.

Fung, Shun C., to Exxon Research and Engineering Co. Highly dispersed supported group VIII noble metal phosphorus compounds. 4,454,246, Cl. 502-213.000.

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Nakajima, Akira; Furukawa, Takayoshi; Nakano, Atsuo; Yamashiro, Kunio; and Goda, Katsumi, 4,453,688, Cl. 248-262.000.

GAC International, Inc.: *See*—
Nodai, Etsuo; and Watanabe, Takeshi, 4,453,917, Cl. 433-5.000.

Gaffney, Anne M.; and Sofranko, John A., to Atlantic Richfield Company. Preparation of dialkyl oxalates using a heterogeneous Pd-V-P catalyst for the oxidative carbonylation of alcohols. 4,454,342, Cl. 560-204.000.

Gahwiler, Hermann; and Lorenz, Adrian, to Contraves AG. Injection syringe for the successive injection of two liquids into the blood vessels of living bodies. 4,453,934, Cl. 604-191.000.

Gaida, Wolfram: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, 4,454,149, Cl. 424-273.00R.

Gallagher, John J., Jr.: *See*—
Frias, Robert; Cain, Troy D.; Gallagher, John J., Jr.; and Watson, William, 4,453,872, Cl. 414-22.000.

Gallo, Mario: *See*—
Wirth, Johannes; Gallo, Mario; and Saner, Kaspar, 4,453,608, Cl. 177-210.0FP.

Galy, Michel G. H., to Institut Merieux, Societe Anonyme. Scarifier. 4,453,926, Cl. 604-47.000.

Ganguli, Partha S., to HRI, Inc. Catalyst regeneration process including metal contaminants removal. 4,454,240, Cl. 502-26.000.

Gansow, Otto A.; and Strand, Mette. Use of metal chelate conjugated monoclonal antibodies. 4,454,106, Cl. 424-1.100.

Gardiner, John W.: *See*—
Dahlgren, Harold P.; Taylor, James E.; and Gardiner, John W., 4,453,463, Cl. 101-148.000.

Gardner, David M.; and Clark, Roger T., to Pennwalt Corporation. Preparation of amines from olefins using cetain transition metal catalysts. 4,454,321, Cl. 546-184.000.

Garnett, Edward V. Vehicle mounted aerial lift. 4,453,672, Cl. 239-166.000.

Garnett, Frederick W.; and Kelly, James C., to Starkville Tool and Die Company. Method and apparatus for cutting and tacking stitches. 4,453,481, Cl. 112-288.000.

Garrison, Forrest C.; and Wells, William L., to Tennessee Valley Authority. Dewatering of flue gas desulfurization sulfite solids. 4,454,101, Cl. 423-242.000.

Gauger, Jurgen: *See*—
Hinden, Jean; Katz, Michael; and Gauger, Jurgen, 4,454,169, Cl. 427-125.000.

Gay, Walter A.: *See*—
Dietrich, Robert F.; and Gay, Walter A., 4,454,362, Cl. 568-938.000.

Gayer, Melvin D.: *See*—
Foster, Randy C.; and Gayer, Melvin D., 4,454,236, Cl. 474-135.000.

Geasey, L. Thomas: *See*—
Cranford, H. Bruce, Jr.; Geasey, L. Thomas; and Arnold, Mark F., 4,453,768, Cl. 297-440.000.

Gebelius, Sven R. V. Load supporting device. 4,453,613, Cl. 180-125.000.

Gebr. Eickhoff Maschinefabrik und Eisengiesserei m.b.H.: *See*—
Knorr, Volker, 4,453,774, Cl. 299-42.000.

Geisler, James R.: *See*—
Helms, Walter J.; and Geisler, James R., 4,454,601, Cl. 371-34.000.

Gellman, Gary; Erfurt, George A.; and Roe, James E., to Nabisco Brands, Inc. Canine biscuit containing discrete meat and/or meat by-product particles and method for making same. 4,454,163, Cl. 426-549.000.

Gellman, Gary; Erfurt, George A.; and Roe, James E., to Nabisco Brands, Inc. Soft canine biscuit containing discrete meat and/or meat by-product particles and method for making same. 4,454,164, Cl. 426-549.000.

General Connectors Corp.: *See*—
Greenwald, Fred A., 4,453,723, Cl. 277-164.000.

General Director of the Agency of Industrial Science and Technology: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,454,330, Cl. 549-420.000.

General Dynamics Electronics Division: *See*—
Hosking, Michael B., 4,454,442, Cl. 310-328.000.

General Electric Company: *See*—
Barnes, Richard A.; and Bartz, Gregory J., 4,454,552, Cl. 361-9.000.
Boettner, Fred H.; and Walker, Loren H., 4,454,470, Cl. 324-78.00R.
Brantley, James W., 4,453,890, Cl. 416-220.00R.
Bush, Alvin A.; Giorgis, John, Jr.; and Anderson, Thomas E., 4,454,574, Cl. 363-134.000.
Cleveland, William K. S.; and Pabis, William J., 4,454,379, Cl. 174-107.000.
Cooper, Glenn D.; and Katchman, Arthur, 4,454,271, Cl. 525-132.000.
DePuy, Robert P., 4,454,556, Cl. 361-73.000.
Flax, Stephen W., 4,453,550, Cl. 128-660.000.
Fox, Daniel W.; and Keane, John J., 4,454,278, Cl. 524-343.000.
Geyer, Eugen J.; and Mosmer, Eugen K., 4,453,367, Cl. 52-806.000.
Konrad, Charles E., 4,454,503, Cl. 340-648.000.

Liu, Ping Y., 4,454,287, Cl. 524-508.000.
Mark, Victor; and Hedges, Charles V., 4,454,308, Cl. 525-444.000.
Matulevich, Edward S., 4,454,455, Cl. 318-71.000.
Metoff, Rudolph, 4,454,451, Cl. 315-58.000.
Naumann, Ted F., Jr.; and Carnes, Ronald C., 4,453,409, Cl. 73-639.000.
Ohno, John M., 4,453,951, Cl. 51-307.000.
Relihan, Gary F., 4,454,606, Cl. 378-97.000.
Roberts, Victor D., 4,454,448, Cl. 313-493.000.
Rosenquist, Niles R., 4,454,275, Cl. 524-164.000.
Srinivasan, Nallaswamy; Lijewski, Robert R.; Collins, Arthur K.; and Morse, Royal R., III, 4,454,507, Cl. 340-744.000.

General Industries Company, The: *See*—
Coleman, Howard R., 4,454,554, Cl. 361-41.000.

General Instrument Corporation: *See*—
Bush, Robert D.; and Cowles, Dean S., 4,454,562, Cl. 361-288.000.

General Motors Corporation: *See*—
Baker, Steven F.; and Johnston, Albert D., 4,453,388, Cl. 70-165.000.
Warwick, Edward H.; and Parker, Donald L., 4,453,621, Cl. 188-250.00G.

General Products Company, Incorporated: *See*—
McKann, H. Smith, 4,453,752, Cl. 292-341.190.

General Refractories Company: *See*—
Mazur, Jeffrey A., 4,453,637, Cl. 206-602.000.

General Signal Corporation: *See*—
Engelbrecht, Horst P.; and Weetman, Ronald J., 4,454,078, Cl. 261-93.000.
Helms, Walter J.; and Geisler, James R., 4,454,601, Cl. 371-34.000.
Keenan, John R., 4,453,746, Cl. 285-256.000.
Newton, Ronald O., 4,453,777, Cl. 303-2.000.

General Tire & Rubber Company, The: *See*—
Kuan, Tiong H.; Pantuso, Joseph; and Sommer, John G., 4,453,992, Cl. 156-115.000.

Gennari, Federico: *See*—
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Genyk, Stepan N.; Krysa, Vasily M.; Zraiko, Mikhail V.; Vovk, Ljubomir G.; and Pyatiletov, Ivan I., to Ivano-Frankovsky Gosudarstvenny Meditsinsky Institut. Surgical instrument for applying staples. 4,453,661, Cl. 227-19.000.

George Fischer Ltd.: *See*—
Rohr, Jakob, 4,453,776, Cl. 301-5.0VH.

Gerasimov, Sergei I.: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Berezniko, Ivan N.; Boadarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Gerber, Heinz J., to Gerber Scientific, Inc. Thread consuming machine with thread coloring device and related process. 4,453,477, Cl. 112-121.120.

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Gerber, Heinz J., 4,453,477, Cl. 112-121.120.

Germicidal Electronics, Inc.: *See*—
Freeman, Lawrence M.; and Simpson, Donald A., 4,453,504, Cl. 123-52.00B.

Gerrick, H. George. Necktie protector. 4,453,273, Cl. 2-46.000.

Gesco International: *See*—
Sinko, George E., 4,453,927, Cl. 604-52.000.

Gessinger, Gernot; and Schroder, Gunther, to BBC Brown, Boveri & Company, Limited. Process for the production of a fine-grained work piece as finished part from a heat resistant austenitic nickel based alloy. 4,453,985, Cl. 148-11.50N.

Gewerkschaft Eisenhutte Westfalia: *See*—
Merten, Gerhard; Steinkuhl, Bernd; and Breuer, Oswald, 4,453,771, Cl. 299-34.000.

Geyer, Eugen J.; and Mossner, Eugen K., to General Electric Company. Honeycomb core material and sandwich construction structural building materials incorporating same. 4,453,367, Cl. 52-806.000.

Giaimo, Anthony: *See*—
Larsen, Robert H.; and Giaimo, Anthony, 4,453,480, Cl. 112-254.000.

Gilcrest, James M. Hub disengaging apparatus for combines or the like. 4,453,852, Cl. 403-1.000.

Gillum, Joseph A. Flying disc carrying clip. 4,453,656, Cl. 224-247.000.

Gilvarg, Charles; and Kingsbury, William D., to SmithKline Beckman Corporation. Oligopeptide prodrugs. 4,454,065, Cl. 260-112.50R.

Gin, Abram. Inflatable body breaking game. 4,453,711, Cl. 273-86.00R.

Ginsburg, Robert S.: *See*—
Ofsowitz, Warwick N.; and Ginsburg, Robert S., 4,453,325, Cl. 40-333.000.

Giorgis, John, Jr.: *See*—
Bush, Alvin A.; Giorgis, John, Jr.; and Anderson, Thomas E., 4,454,574, Cl. 363-134.000.

Gitman, Grigory M., to Cadre Corporation, The. Recuperative burner. 4,453,913, Cl. 431-8.000.

GKN Stenman, AB: *See*—
Widen, Bo G., 4,453,432, Cl. 76-110.000.

Gladden, Robert S., to Tate Architectural Products, Inc. Edge trim structure for access floor panel. 4,453,365, Cl. 52-716.000.

Glaser, Kurt, to Webasto-Werk W. Baier GmbH & Co. Control assembly and process for producing same. 4,453,922, Cl. 464-57.000.

Glaxo Group Limited: *See*—
Elliott, Leonard G., 4,453,574, Cl. 141-5.000.

Gleb, Anatoly K.: *See*—
Klubovich, Vladimir V.; Basenok, Gennady S.; Konyshev, Leonid K.; Sidorenko, Valery A.; Gleb, Anatoly K.; Zinder, Anatoly M.; Konnikov, Mikhail N.; and Gorelik, Boris E., 4,453,392, Cl. 72-75.000.

Gmeiner, Gunter; and Krugener, Rolf, to Daimler-Benz Aktiengesellschaft. Switching device for controlling servo drive mechanisms of vehicle seat. 4,454,390, Cl. 200-6.00A.

Gobeaux, Pierre W.: *See*—
Penverne, Albert; and Gobeaux, Pierre W., 4,453,735, Cl. 280-690.000.

Gobel, Armin: *See*—
Patzschke, Hans-Peter; and Gobel, Armin, 4,454,264, Cl. 523-414.000.

Goda, Katsumi: *See*—
Nakajima, Akira; Furukawa, Takayoshi; Nakano, Atsuo; Yamashiro, Kunio; and Goda, Katsumi, 4,453,688, Cl. 248-262.000.

Godawski, Theodore J., to Zenith Radio Corporation. Flyback transformer with improved regulation. 4,454,572, Cl. 363-68.000.

Goepfert, Serge; Marsaud, Serge G.; Renault, Serge A. M.; and Roger, Francoise M. M., to Corning Glass Works. Method for tinting a sheet of polyurethane. 4,454,170, Cl. 427-160.000.

Goeth, Hanns: *See*—
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.

Goff, David L., to Du Pont de Nemours, E. I., and Company. Electrical device containing a radiation-sensitive polyimide precursor composition derived from a diaryl fluoro compound. 4,454,220, Cl. 430-311.000.

Goldberg, Arthur H.; Matluck, Meyer; and Ranucci, Joseph A., to Hoffmann-La Roche Inc. Nasal administration of dextromethorphan. 4,454,140, Cl. 424-260.000.

Goldberg, Mel. Mask display package. 4,453,629, Cl. 206-45.330.

Gongwer, Dean: *See*—
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Uram, John R., Jr., 4,454,201, Cl. 428-413.000.

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Smith, William T., 4,453,583, Cl. 152-410.000.

Gopher Shooter's Supply Company, Incorporated: *See*—
Purdie, Clarence E., deceased, 4,453,610, Cl. 177-247.000.

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Gorelik, Boris E.: *See*—
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Fedde, George A.; and Gottschalk, Juan M., 4,454,539, Cl. 358-106.000.
Kirk, Kenneth H.; Fedde, George A.; and Gottschalk, Juan M., 4,454,540, Cl. 358-106.000.

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Gould, Gerry E. Fuel sump drainage tool. 4,453,579, Cl. 141-329.000.

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Graham, Thomas G., to Singer Company, The. Handwheel clutch for sewing machines. 4,453,624, Cl. 192-67.00R.

Grant, David. Method and apparatus for determining the position of a piston in the cylinder of a reciprocating engine. 4,453,402, Cl. 73-117.200.

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Grauberger, Hermann: *See*—
Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, 4,453,465, Cl. 101-228.000.

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Cisar, James R.; and Grauzer, Attila, 4,454,082, Cl. 264-40.100.

Greenberger, William, to Hopp Press, Inc., The. Pricing sign with changeable numbers. 4,453,324, Cl. 40-5.000.

Greene, William J., to Teledyne Walterboro, a Division of Teledyne Industries, Inc. Electric generator that operates with few ampere-turns in field winding. 4,454,465, Cl. 322-49.000.

Greenfield, John C.: *See*—
Whaley, Howard A.; Snyder, William C.; Greenfield, John C.; and Coats, John H., 4,454,228, Cl. 435-253.000.

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Muchowski, Joseph M.; and Greenhouse, Robert, 4,454,326, Cl. 548-453.000.

Greenleaf, John P. Portable shower. 4,453,280, Cl. 4-599.000.

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Maus, Julius, 4,453,345, Cl. 49-193.000.

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Griffen, Neil C.; and Behrman, David M., to Reliance Electric Company. Compensated load cell. 4,453,609, Cl. 177-211.000.

Griffin, Freddie, Jr.: *See*—
Wallace, Steven L.; Griffin, Freddie, Jr.; and Tvedt, Thorwald J., Jr., 4,454,046, Cl. 210-698.000.

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Lowicki, Norbert; and Desai, Natvarlal B., 4,454,153, Cl. 424-289.000.

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Groberg, Ann-Marie M. S.: *See*—
Bjorling, Karl T.; and Groberg, Ann-Marie M. S., 4,454,094, Cl. 422-56.000.

Groeger, Theodore O. Flexible cylinder engine. 4,453,508, Cl. 123-193.00P.

Gron, Poul: *See*—
Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, 4,454,110, Cl. 424-54.000.

Grosbois, Jean: *See*—
Bachot, Jean; and Grosbois, Jean, 4,454,012, Cl. 204-72.000.

Grot, Walther G., to Du Pont de Nemours, E. I., and Company. Process for making articles coated with a liquid composition of perfluorinated ion exchange resin. 4,453,991, Cl. 156-94.000.

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Grow Group, Inc.: *See*—
Slater, William; and Kenny, Michael, 4,453,988, Cl. 148-6.14R.

Grow, Robert M., to Burroughs Corporation. Timed token ring. 4,454,508, Cl. 340-825.050.

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Gruber, Robert J.; Julien, Paul C.; and Yourd, Raymond A., III, to Xerox Corporation. Toner compositions containing pyridinium tetrafluoroborates. 4,454,214, Cl. 430-110.000.

Gruber, Wolfgang: *See*—
Schweier, Guenther; Gruber, Wolfgang; Metzger, Werner; and Hennenberger, Peter, 4,454,299, Cl. 525-53.000.

GSE, Inc.: *See*—
Mokhbery, Javad M.; and Ulicny, Thomas A., 4,453,606, Cl. 177-126.000.
Zink, Frederick J., 4,453,607, Cl. 177-179.000.

GTE Automatic Electric Inc.: *See*—
Daniels, William R.; and Young, John S., 4,454,388, Cl. 179-175.20R.
Grantland, Gary; and Boeckmann, Eduard F. B., 4,454,385, Cl. 179-81.00R.
Neese, Wayne E., 4,454,396, Cl. 200-292.000.

GTE Products Corporation: *See*—
English, George J.; Rothwell, Harold L., Jr.; and Keeffe, William M., 4,454,450, Cl. 313-620.000.
Roche, William J.; and Parks, Ralph P., Jr., 4,454,447, Cl. 313-492.000.
Scheithauer, Richard A.; Vanderpool, Clarence D.; Miller, Michael J.; and MacInnis, Martin B., 4,454,098, Cl. 423-55.000.

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Costantini, John J.; Weilbacker, Thomas O.; and Guglielmo, Joseph A., 4,454,577, Cl. 364-200.000.

Guiader, Alain Y., to Brissonneau & Lotz Marine. Safety device for marine platform. 4,453,858, Cl. 405-198.000.

Gulf Research & Development Company: *See*—
Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., 4,454,366, Cl. 585-525.000.

Gullong, C. Barton. Shelter for electronic games. 4,453,789, Cl. 312-324.000.

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Gulsby, Jerry G.; and Cook, G. Dennis, 4,453,958, Cl. 62-28.000.

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Zimmermann, Wolfgang; Harreus, Albrecht; and Gutte, Richard, 4,453,320, Cl. 34-95.000.

Guyer, Reynolds W. Lawn game with vertically slidable targets. 4,453,713, Cl. 273-118.00R.

H. Schurter AG: *See*—
Wallner, Peter; and Hollenstein, Peter, 4,453,794, Cl. 339-90.00F.

Haag, James W., to Texaco Inc. Wireline fishing tool. 4,453,756, Cl. 294-86.290.

Haas, Hans: *See*—
Landgraber, Herbert; Kowalski, Werner; Scheffer, Johan; and Haas, Hans, 4,454,054, Cl. 252-135.000.

Hackett, Robert J., to Haly, Inc. Molten metal sampler. 4,453,424, Cl. 73-864.580.

Hackleman, David E.; Nielsen, Ralph H., Jr.; and Leban, Marzio A., to Hewlett-Packard Company. Utilizing controlled illumination for creating or removing a conductive layer from a SiO_2 insulator over a PN junction bearing semiconductor. 4,454,004, Cl. 156-643.000.

Hafner, Udo, to Robert Bosch GmbH. Fuel injection system. 4,453,671, Cl. 239-124.000.

Hairline Creations, Inc.: *See*—
Finamore, Paul V., 4,453,555, Cl. 132-53.000.

Haken, Jack E.: *See*—
Heffron, Charles B.; Lenarduzzi, Roberto; and Haken, Jack E., 4,454,594, Cl. 364-900.000.

Hakko Co., Ltd.: *See*—
Koga, Motoyuki, 4,454,173, Cl. 427-235.000.
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Halcon SD Group, Inc., The: *See*—
Khoobiar, Sargis, 4,454,346, Cl. 562-535.000.

Hale, William H.; and Day, Robert E. Odometer mounted between roller skate wheels. 4,454,411, Cl. 235-95.00R.

Hall, Jeffrey L.: *See*—
Brien, Gerald J.; and Hall, Jeffrey L., 4,454,224, Cl. 430-393.000.

Hall, Stacy W., to NCR Corporation. Protected electrodes for plasma panels. 4,454,449, Cl. 313-584.000.

Halliburton Company: *See*—
Conway, Michael W.; and Norman, Lewis R., 4,453,596, Cl. 166-278.000.

Hallmark Cards, Incorporated: *See*—
Sanders, Robert E.; and Seibolt, Bernard P., 4,453,743, Cl. 281-18.000.

Halpern, Benjamin R., to Meffert, Uwe. Three-dimensional puzzle. 4,453,715, Cl. 273-153.00S.

Halpern, Yuval; and Niswander, Ron H., to Borg-Warner Corporation. Process for preparing pentaerythritol phosphate. 4,454,064, Cl. 260-974.000.

Haly, Inc.: *See*—
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Hamilton, Eric: *See*—
Pilat, John F.; Wells, Douglas M.; Hamilton, Eric; and Compton, J. Theodore, 4,454,579, Cl. 364-200.000.

Hamilton, William J. Strike plate support system. 4,453,751, Cl. 292-340.000.

Hampel, David A.: *See*—
Miller, Ronald R.; Barber, William R., Jr.; Hampel, David A.; and Ault, James E., 4,454,205, Cl. 428-556.000.

Hampson, Richard A.: *See*—
Archer, James L.; Hampson, Richard A.; Matsuda, Susumu; and Yagi, Takashi, 4,453,842, Cl. 400-605.000.

Hampton, John: *See*—
MacGilp, Neil A.; McRitchie, Allan C.; Ingram, Barry T.; and Hampton, John, 4,454,049, Cl. 252-8.800.

Hamuro, Mitsuro; and Kaneko, Fumihiko, to Murata Manufacturing Co., Ltd. Electronic component series. 4,453,633, Cl. 206-330.000.

Hanamoto, Mark S.: *See*—
Breglio, Susan E.; and Hanamoto, Mark S., 4,454,232, Cl. 436-504.000.

Hankins, Kevin T., to Harris Corporation. Controlled thermal-oxidation thinning of polycrystalline silicon. 4,454,002, Cl. 156-626.000.

Hanks, John, to OMAC, Inc. Step operated locking mechanism for aircraft lower door. 4,453,684, Cl. 244-129.500.

Hanlon, James H.: *See*—
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,454,203, Cl. 428-520.000.

Hann, Paul D.: *See*—
Hutson, Thomas, Jr.; and Hann, Paul D., 4,454,369, Cl. 585-719.000.

Harada, Hiroshi: *See*—
Abe, Haruhiko; Harada, Hiroshi; Kinoshita, Shigeji; Hirata, Yoshihiro; Denda, Masahiko; and Akasaka, Yoichi, 4,454,166, Cl. 427-85.000.

Harada, Yuho; Maruyama, Tsutomu; Kumakura, Yoshiyuki; and Kuwayama, Shigeo, to Fuji Photo Optical Co., Ltd. Method of manufacturing a flexible optical fiber bundle. 4,453,962, Cl. 65-3.150.

Harbeke, Gerold J. Pipe support coupling and method of using same. 4,453,354, Cl. 52-220.000.

Harbor Branch Foundation, Inc.: *See*—
Holt, John K., 4,454,095, Cl. 422-64.000.

Harders, Simon L.: *See*—
Moritz, Peter G.; and Harders, Simon L., 4,453,390, Cl. 70-434.000.

Harken, Peter O., to Vanguard, Inc. Cam cleat. 4,453,486, Cl. 114-218.000.

Harney, Ralph P.; and Mensing, Clifford E., to Intermatic Incorporated. Data entry system for micro-computer based controllers. 4,454,505, Cl. 340-712.000.

Harp, Marlyn F.: *See*—
Pollock, Marlan R.; and Harp, Marlyn F., 4,454,248, Cl. 521-53.000.

Harrell, Jack B., Jr.: *See*—
Hausler, Rudolf H.; Savage, Allen L.; and Harrell, Jack B., Jr., 4,454,006, Cl. 204-1.00T.

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Harrild, Niels Aage L., to Nigu-Pack A/S. Closure having frangible means. 4,453,646, Cl. 220-258.000.

Harrington, James V.; and Baldwin, Edward G. M., to HB Clip-Lok Industries Ltd. Panel retaining clamp for collapsible pallet containers. 4,453,471, Cl. 108-55.100.

Harris Corporation: *See*—
Hankins, Kevin T., 4,454,002, Cl. 156-626.000.
Wood, Grady M., 4,454,432, Cl. 307-456.000.

Harris, John; and Anthony, John E., to Frontier Plastics (South Wales) Limited. Disposal bin. 4,453,648, Cl. 220-324.000.

Harte, J. Richard. Instructional apparatus with multiple types of feedback. 4,453,920, Cl. 434-334.000.

Hartman, Robert J.: *See*—
Ramlow, Gerhard G.; Heyman, Duane A.; Grace, Oscar M.; Reichel, Curtis J.; and Hartman, Robert J., 4,454,255, Cl. 521-137.000.

Hartmann, Clinton S., to R F Monolithics, Inc. Surface acoustic wave resonator with middle grating. 4,454,488, Cl. 333-195.000.

Harvey Hubbell Incorporated: *See*—
Fidrych, Alfred W., 4,453,291, Cl. 24-115.00N.
Neuroth, David H., 4,454,377, Cl. 174-103.000.
Neuroth, David H., 4,454,378, Cl. 174-103.000.

Hashimoto, Hiroshi: *See*—
Kuze, Katsuaki; Hashimoto, Hiroshi; Ohta, Takeshi; Akaishi, Tsukasa; Takeuchi, Kunio; and Kamatani, Hirovoshi, 4,454,312, Cl. 528-275.000.

Hashimoto, Mitsuru: *See*—
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,454,212, Cl. 430-59.000.

Hashimoto, Takao: *See*—
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,454,367, Cl. 585-533.000.

Hassun, Roland; and Kovalick, Albert W., to Hewlett-Packard Company. Waveform synthesis using multiplexed parallel synthesizers. 4,454,486, Cl. 332-16.00R.

Hata, Hideo: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,454,303, Cl. 525-211.000.

Hatano, Yoshiyuki: *See*—
Takahashi, Susumu; Kato, Yasuo; Oana, Yoshinori; and Hatano, Yoshiyuki, 4,453,808, Cl. 351-208.000.

Hattori, Masaharu: *See*—
Sakae, Mitsuhisa; and Hattori, Masaharu, 4,453,512, Cl. 123-198.00D.

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Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitoshi, 4,453,397, Cl. 73-23.000.

Hauk, Klaus, to Deere & Company. Windscreen washer unit. 4,453,895, Cl. 417-422.000.

Hauni-Werke Korber & Co. KG.: *See*—
Redeker, Werner; and Uhlig, Uwe, 4,453,347, Cl. 51-108.00R.

Haury, Andre : *See*—
Belbel, Elie; Haury, Andre ; Fechant, Louis; and Siffroi, Lucien, 4,454,490, Cl. 335-16.000.

Hauser, Wolfgang, to Hugo Brennenstuhl GmbH & Co. KG. Method and circuit for operating a spray gun having a vibrating armature drive. 4,454,456, Cl. 318-129.000.

Hausler, Rudolf H.; Savage, Allen L.; and Harrell, Jack B., Jr., to Petrolite Corporation. Method and apparatus for measuring total corrosion rate. 4,454,006, Cl. 204-1.00T.

Haussmann, Wolfgang: *See*—
Luder, Rainer; and Haussmann, Wolfgang, 4,454,534, Cl. 358-31.000.

Hayashi, Asao; Oinoue, Kenichi; Aoki, Masahiro; Nakamura, Junichi; and Ida, Masatoshi, to Olympus Optical Company, Ltd. Method of automatically adjusting focus conditions. 4,453,818, Cl. 354-406.000.

Hayashi, Motoshige; Tanaka, Shigetoshi; Yoshii, Motokazu; and Doi, Tsuneo, to Sekisui Plastics. Method and apparatus for preparing thermoplastic resin foam. 4,454,087, Cl. 264-53.000.

Hayashi, Nobuyuki: *See*—
Yamadera, Takashi; and Hayashi, Nobuyuki, 4,454,219, Cl. 430-281.000.

Hayashi, Torahiko. Apparatus for continuously discharging dough to produce a web of dough sheet. 4,453,906, Cl. 425-224.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Internal combustion engine with bearing beam structure. 4,453,509, Cl. 123-195.00R.

Hayatsu, Kazuo: *See*—
Ueno, Katsuji; Maruyama, Takashi; and Hayatsu, Kazuo, 4,454,284, Cl. 524-427.000.

Hayes, James K.; and Hayes, Lawrence R., to Combustion Engineering, Inc. Transducer for determining if steam generator tubes are locked in at support plate. 4,453,501, Cl. 122-510.000.

Hayes, Jess W. Apparatus for producing perspective drawings. 4,453,318, Cl. 33-432.000.

Hayes, Lawrence R.: *See*—
Hayes, James K.; and Hayes, Lawrence R., 4,453,501, Cl. 122-510.000.

HB Clip-Lok Industries Ltd.: *See*—
Harrington, James V.; and Baldwin, Edward G. M., 4,453,471, Cl. 108-55.100.

Heasley, Raymond E.: *See*—
Anderson, Harry E.; and Heasley, Raymond E., 4,453,702, Cl. 266-49.000.

Heath, Alastair E. F.: *See*—
Bussey, Stephen; Cockburn, Barry; and Heath, Alastair E. F., 4,453,403, Cl. 73-119.00A.

Hecht, Sidney M., to WOFOR AG. Biologically active extracts from *Cerastium viscosum* L. (Coryophyllacese) Mississippi and method of obtaining same. 4,454,124, Cl. 424-195.000.

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Mark, Victor; and Hedges, Charles V., 4,454,308, Cl. 525-444.000.

Heffron, Charles B.; Lenarduzzi, Roberto; and Haken, Jack E., to U.S. Philips Corporation. Method and apparatus to secure proprietary operation of computer equipment. 4,454,594, Cl. 364-900.000.

Heger, Friedl, to Chemie Linz Aktiengesellschaft. Preparations of storage-stable aqueous solutions of melamine-formaldehyde resins. 4,454,277, Cl. 524-211.000.

Hehl, Karl. Adjustable roller track bogies for die carrier frame of injection molding machine. 4,453,912, Cl. 425-589.000.

Heidelberger Druckmaschinen AG: *See*—
Jeschke, Willi, 4,453,467, Cl. 101-363.000.

Heilmeier & Weinlein Fabrik Fuer Oel-Hydraulik GmbH & Co. KG.: *See*—
Brunner, Rudolf, 4,453,453, Cl. 91-451.000.

Heinrich, Bruno; and Schwenk, Wilhelm, to Mannesmann AG. Lining metal tubing with a corrosion- and abrasion-proof cement mortar. 4,454,172, Cl. 427-234.000.

Heinzer, Hans E.; and Taylor, Donald L., to International Telephone and Telegraph Corporation. Optical fiber coil storage arrangement and a method of manufacturing the same. 4,453,635, Cl. 206-408.000.

Heitz, William D.; Ealer, George E.; and Cieloszyk, Gary S., to Union Carbide Corporation. Formulation for high clarity linear low density polyethylene film products. 4,454,281, Cl. 524-399.000.

Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Web turning rod having air flow control means. 4,453,465, Cl. 101-228.000.

Helmers, Earl L.: *See*—
Smith, Terrence; Moore, Thomas S.; and Helmers, Earl L., 4,453,778, Cl. 303-22.00R.

Helms, Charles R.; Bousum, John V.; Walters, Richard T.; and Carr, William H., to Container Corporation of America. Reinforced multi-article carrier. 4,453,630, Cl. 206-158.000.

Helms, Walter J.; and Geisler, James R., to General Signal Corporation. Method and apparatus for communication of information and error checking. 4,454,601, Cl. 371-34.000.

Hemker, Wilfred J., to SCM Corporation. Stabilization of oil and water emulsions using polyglycerol esters of fatty acids. 4,454,113, Cl. 424-63.000.

Hemmi, Rolander, to Escher Wyss Aktiengesellschaft. Controlled deflection roll. 4,453,299, Cl. 29-116.0AD.

Henderson, Herman O., Jr.; LeMoine, Joseph L.; and Tomlin, Jerry B., to Koomey, Inc. Hydraulic subsea control system with disconnect. 4,453,566, Cl. 137-614.020.

Hendrick, Michael E.: *See*—
Brennan, Thomas M.; and Hendrick, Michael E., 4,454,328, Cl. 549-28.000.

Hendrickson, William A.; Sherman, Dudley M.; Chou, Hsin-hsin; and Kolpe, Vasant V., to Minnesota Mining and Manufacturing Company. Primed surface and charge transfer media. 4,454,186, Cl. 428-148.000.

Henkel Corporation: *See*—
Tuominen, Francis W., 4,454,112, Cl. 424-60.000.

Hennenberger, Peter: *See*—
Schweier, Guenther; Gruber, Wolfgang; Metzger, Werner; and Hennenberger, Peter, 4,454,299, Cl. 525-53.000.

Hennessy, Michael J. Slip on tray for infant seat. 4,453,764, Cl. 297-153.000.

Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Hydrotreating catalyst and process. 4,454,026, Cl. 208-251.00H.

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Patzschke, Hans-Peter; and Gobel, Armin, 4,454,264, Cl. 523-414.000.

Herbig, Mark A.: *See*—
Astrom, Gordon L.; and Herbig, Mark A., 4,454,034, Cl. 210-108.000.

Herculite Products, Inc.: *See*—
Kodadek, Robert; and Welch, James H., 4,453,675, Cl. 239-675.000.

Hershel, Ronald S.; and Winn, Ray, to Advanced Semiconductor Products, Inc. Apparatus and methods for measuring the optical thickness and index of refraction of thin, optical membranes. 4,453,828, Cl. 356-357.000.

Hetet, Yves J. F.: *See*—
Ferrieu, Gilbert M. M.; Hetet, Yves J. F.; and Balch, Jacques Y., 4,454,384, Cl. 179-81.00B.
Hettinger, William P., Jr., to Ashland Oil, Inc. Passivating heavy metals in carbo-metallic oil conversion. 4,454,025, Cl. 208-120.000.
Hewitt, Amy: *See*—
Silverman, Louis J.; and Hewitt, Amy, 4,453,929, Cl. 604-56.000.
Hewlett-Packard Company: *See*—
Buck, Dean C.; Warren, Richard E.; Smith, David E.; and Rustici, David, 4,453,825, Cl. 356-5.000.
Burns, Darrell M., 4,454,435, Cl. 307-530.000.
Hackleman, David E.; Nielsen, Ralph H., Jr.; and Leban, Marzio A., 4,454,004, Cl. 156-643.000.
Hassun, Roland; and Kovalick, Albert W., 4,454,486, Cl. 332-16.00R.
Holland, Gary L., 4,454,458, Cl. 318-254.000.
Heyligenstaedt & Co. Werkzeugmaschinenfabrik GmbH: *See*—
Rinn, Jurgen, 4,453,313, Cl. 33-178.00D.
Heyman, Duane A.: *See*—
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Del Rosso, Victor, 4,453,575, Cl. 141-83.000.
Hidaka, Takehiko; Morikawa, Takitaro; Shimada, Junichi; and Kumata, Ken, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Optical waveguide for middle infrared band. 4,453,803, Cl. 350-96.320.
Hill, Ira D.: *See*—
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., 4,453,909, Cl. 425-511.000.
Hill, James W.; and Finley, Eugene N. Sound mixing system for film sound editing. 4,453,809, Cl. 352-11.000.
Hill, Lorimer K., to Siliconix Incorporated. High voltage field effect transistor. 4,454,523, Cl. 357-15.000.
Hillman, Jeffrey D., to Forsyth Dental Infirmary for Children. Method of treating periodontosis. 4,454,109, Cl. 424-50.000.
Hinden, Jean; Katz, Michael; and Gauger, Jurgen, to Diamond Shamrock Corporation. Catalytic particles and process for their manufacture. 4,454,169, Cl. 427-125.000.
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Rabinowitz, Mario; Hingorani, Narain G.; and Perry, E. Robert, 4,454,016, Cl. 204-308.000.
Hino, Hiroyuki; Yamamoto, Kunio; Ozono, Ryuichi; Aratani, Hiroshi; and Kawamoto, Susumu, to Mitsubishi Jukogyo Kabushiki Kaisha. Four high mill of the paired-roll-crossing type. 4,453,393, Cl. 72-243.000.
Hipp, Karl H.; and Detsch, Anton, to Bayerische Motoren Werke A.G. Device for height adjustment of a reversing mount for the shoulder belt. 4,453,741, Cl. 280-801.000.
Hira, Kazumi, to Nissan Motor Company, Limited. Combination rack-and-armrest assembly. 4,453,760, Cl. 296-37.130.
Hiraga, Masaharu; Kogima, Tadao; and Saegusa, Nobuaki, to Sanden Corporation. Scroll type fluid displacement apparatus with reinforced wrap seals. 4,453,899, Cl. 418-55.000.
Hiraike, Fumiaki, to Konishiroku Photo Industry Co., Ltd. Method and means for controlling the aperture blades of a camera through pulse motors. 4,453,816, Cl. 354-271.100.
Hirata, Yoshiaki: *See*—
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.
Hirata, Yoshihiro: *See*—
Abe, Haruhiko; Harada, Hiroshi; Kinoshita, Shigeji; Hirata, Yoshihiro; Denda, Masahiko; and Akasaka, Yoichi, 4,454,166, Cl. 427-85.000.
Hirobe, Shunji: *See*—
Okada, Fumio; Hirobe, Shunji; and Yamaguchi, Masayuki, 4,454,537, Cl. 358-77.000.
Hirota, Minoru: *See*—
Ariyama, Kenzo; Yamazaki, Hideo; and Hirota, Minoru, 4,454,210, Cl. 430-31.000.
Hirota, Yojiro; Shinhama, Koichi; Sato, Katsumi; and Wada, Takuo, to Ube Industries, Ltd.; and Hokko Chemical Industry Co., Ltd. Thiophene derivatives. 4,454,131, Cl. 424-248.510.
Hisatsune, Fumiyuki: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,454,395, Cl. 200-147.00R.
Hitachi Chemical Company, Ltd.: *See*—
Yamadera, Takashi; and Hayashi, Nobuyuki, 4,454,219, Cl. 430-281.000.
Hitachi, Ltd.: *See*—
Kajiwara, Ryoichi; Kokura, Satoshi; Kozono, Yuzo; and Onuma, Akira, 4,454,408, Cl. 219-124.340.
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,454,057, Cl. 252-299.100.
Kato, Kazuo; Miyakawa, Nobuaki; Aihara, Makoto; and Matsubara, Kiyoshi, 4,454,500, Cl. 340-347.0AD.
Maeba, Kazuhiko, 4,454,608, Cl. 381-51.000.
Matsumoto, Hidekazu; Bandoh, Tadaaki; and Maejima, Hideo, 4,454,578, Cl. 364-200.000.
Nakamura, Kiyoshi; Isaka, Masayoshi; and Koike, Shigeyoshi, 4,454,457, Cl. 318-135.000.
Sakaguchi, Jiroh, 4,454,467, Cl. 323-313.000.
Sakata, Sooji; and Miura, Haruo, 4,453,889, Cl. 416-198.00A.
Sato, Kazuo; Takasumi, Masakazu; Shiohata, Kouki; Ohmori, Motoji; Shiga, Motohiro; and Fujisawa, Fumio, 4,453,407, Cl. 73-462.000.
Shoji, Mitsuyoshi; Oe, Etsuo; Homma, Yoshiharu; Komatsuzaki, Shigeki; Sato, Morichi; and Ito, Ren, 4,454,052, Cl. 252-68.000.
Soraoka, Minoru, 4,453,757, Cl. 294-86.00R.
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Sasamoto, Hisaya; Yamashita, Seiji; and Takahashi, Noriyoshi, 4,454,460, Cl. 318-491.000.
Yamashita, Seizi; Miyashita, Kunio; Tanabe, Syoji; and Shimotsu, Tadao, 4,454,438, Cl. 310-162.000.
HITCO: *See*—
Street, Sidney W.; and Beckely, Don A., 4,454,283, Cl. 524-424.000.
Hite, W. Lee; and Bright, Gary C., to U.S. Metal Works, Inc. Packaged lumber-dipping apparatus. 4,453,491, Cl. 118-425.000.
Hobbs, Peter D.: *See*—
Dawson, Marcia I.; Hobbs, Peter D.; and Derdzinski, Krzysztof A., 4,454,341, Cl. 560-100.000.
Hobson, Barry C.; and Woodthorpe, John, to T & N Research Materials Ltd. Manufacture of continuous glass filaments and compositions therefor. 4,454,238, Cl. 501-38.000.
Hochstatter, Brian R., to Emerson Electric Co. Radial arm saw. 4,453,691, Cl. 248-542.000.
Hoda, Syed N.; and Olszewski, Anthony R., to Corning Glass Works. Organic-inorganic composites containing synthetic mica. 4,454,237, Cl. 501-2.000.
Hodges, James W.: *See*—
Powell, David W.; and Hodges, James W., 4,453,346, Cl. 49-404.000.
Hodne, Ingard B. Aetuator for a print wire. 4,453,840, Cl. 400-124.000.
Hoechst Aktiengesellschaft: *See*—
Behringer, Hartmut; Karrenbauer, Kurt; and Rehberg, Heinrich, 4,454,067, Cl. 260-176.000.
Dennhardt, Werner, 4,453,708, Cl. 271-8.00A.
Holzer, Alois, 4,453,677, Cl. 242-18.00R.
Landgraber, Herbert; Kowalski, Werner; Scheffer, Johan; and Haas, Hans, 4,454,054, Cl. 252-135.000.
Mees, Bernhard; and Ramloch, Herbert, 4,454,075, Cl. 260-513.00R.
Mencke, Burkhard; Ehlers, Eberhard; Blumbach, Jurgen; Durckheimer, Walter; and Seeger, Karl, 4,454,129, Cl. 424-246.000.
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,454,279, Cl. 524-376.000.
Perplies, Eberhard, 4,454,045, Cl. 210-672.000.
Roder, Anton, 4,454,227, Cl. 435-240.000.
Schubert, Hans; and Baessler, Konrad, 4,454,355, Cl. 568-584.000.
Siegemund, Gunter; and Schwertfeger, Werner, 4,454,072, Cl. 260-458.00F.
Zentner, Erich; and Bingemann, Wilhelm, 4,454,294, Cl. 526-344.300.
Zimmermann, Wolfgang; Harreus, Albrecht; and Gutte, Richard, 4,453,320, Cl. 34-95.000.
Hoefke, Wolfgang: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, 4,454,149, Cl. 424-273.00R.
Hoesch Maschinenfabrik Deutschland AG: *See*—
Sauerwald, Walter; Weck, Bernd; and Schmidts, Klaus, 4,453,435, Cl. 82-1.400.
Hoffman, Craig A.; and Lawrence, William D., to Dynamic Resources Unlimited, Inc. Document holding and segregating device. 4,453,326, Cl. 40-377.000.
Hoffmann, Kurt; and Kantz, Dieter, to Siemens Aktiengesellschaft. Semiconductor circuit with a circuit part controlled by a substrate bias. 4,454,431, Cl. 307-296.00R.
Hoffmann-La Roche Inc.: *See*—
Barry, Richard H.; and Lazarus, Jack H., 4,454,152, Cl. 424-283.000.
Goldberg, Arthur H.; Matluck, Meyer; and Ranucci, Joseph A., 4,454,140, Cl. 424-260.000.
Hoffmann, Paul D., to Lilie-Hoffmann Cooling Towers, Inc. Circular cooling tower with improved fill supporting structure and process of forming. 4,454,079, Cl. 261-111.000.
Hohn, Werner, to Wegu Gummi-U. Kunststoffwerke Walter Drabing KG. Resiliently deformable safety covering tile. 4,454,181, Cl. 428-68.000.
Hokko Chemical Industry Co., Ltd.: *See*—
Hirota, Yojiro; Shinhama, Koichi; Sato, Katsumi; and Wada, Takuo, 4,454,131, Cl. 424-248.510.
Hoklykem Holdings Limited: *See*—
Corbett, Sydney C., 4,453,556, Cl. 134-65.000.
Holder, H. Dennis; and Goodman, Herb L. In-line electrical wire connector. 4,454,376, Cl. 174-87.000.
Holland, Gary L., to Hewlett-Packard Company. Synchronous drive for brushless DC motor. 4,454,458, Cl. 318-254.000.
Holland, Gerald F.: *See*—
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Holland-Letz, Gunter, to Esselte Pendaflex Corporation. Device for intermittently transporting a tape provided with control recesses at regularly spaced intervals. 4,453,999, Cl. 156-361.000.
Hollandse Signaalapparaten B.V.: *See*—
Van Dort, Jacobus M., 4,453,994, Cl. 156-154.000.
Hollenstein, Peter: *See*—
Wallner, Peter; and Hollenstein, Peter, 4,453,794, Cl. 339-90.00F.

Holliday, Robert A.; and Williamson, Warren L., to Sun West Solar Systems, Inc. Duty cycle controller. 4,453,590, Cl. 165-12.000.
Hollingsead International Inc.: *See*—
Hollingsead, Robert A.; and Pryor, Clyde R., 4,453,797, Cl. 339-132.00B.
Hollingsead, Robert A.; and Pryor, Clyde R., to Hollingsead International Inc. Avionic electrical connector mounting apparatus. 4,453,797, Cl. 339-132.00B.
Hollingsworth, John D. Metallic card clothing and method and apparatus for making same. 4,453,431, Cl. 76-011.000.
Hollmann, Martin, to Westinghouse Electric Corp. Holding apparatus. 4,453,449, Cl. 89-1.806.
Holman, William R.: *See*—
Fulton, Fred J.; Honodel, Charles A.; Holman, William R.; and Weingart, Richard C., 4,453,423, Cl. 73-863.000.
Holt, John K., to Harbor Branch Foundation, Inc. Automatic chemical analysis devices and methods. 4,454,095, Cl. 422-64.000.
Holtzberg, Matthew W.; and Spaulding, Lawrence D., to Standard Oil Company (Indiana). Composite push rod and process. 4,453,505, Cl. 123-90.610.
Holzer, Alois, to Hoechst Aktiengesellschaft. Device for doffing a bobbin. 4,453,677, Cl. 242-18.00R.
Homburg, Axel: *See*—
Brachert, Heinrich; and Homburg, Axel, 4,453,860, Cl. 405-259.000.
Honeywell Inc.: *See*—
Braschler, Boyce D.; Diddens, Paul A.; Erickson, Roger D.; and O'Toole, Charles J., Jr., 4,454,520, Cl. 346-153.100.
James, Stephen A., 4,454,563, Cl. 361-306.000.
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Shoji, Mitsuyoshi; Oe, Etsuo; Honma, Yoshiharu; Komatsuzaki, Shigeki; Sato, Moriichi; and Ito, Ren, 4,454,052, Cl. 252-68.000.
Honodel, Charles A.: *See*—
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Hopp Press, Inc., The: *See*—
Greenberger, William, 4,453,324, Cl. 40-5.000.
Hopperstad, Craig A.: *See*—
Cleary, Patrick J.; and Hopperstad, Craig A., 4,454,582, Cl. 364-427.000.
Hori, Osamu: *See*—
Ueda, Masahiro; Noba, Masahiko; Hori, Osamu; Murata, Kimitoshi; and Nakao, Hatsuo, 4,453,506, Cl. 123-179.00G.
Hori, Yutaka; Sunakawa, Makoto; and Satsuma, Michio, to Nitto Electric Industrial Co., Ltd. Bonding method. 4,453,997, Cl. 156-305.000.
Horii, Shoichi; Kanada, Eiji; and Nakatani, Mamoru, to Mitsubishi Paper Mills, Ltd. Method for making improved lithographic printing plate. 4,454,216, Cl. 430-204.000.
Horii, Takashi: *See*—
Wada, Satomi; Senda, Masanori; Horii, Takashi; and Ota, Yozo, 4,454,076, Cl. 261-44.00C.
Horii, Takeshi, to Ace Company, Ltd. Bag having a cover member for shoes and other items. 4,453,623, Cl. 190-102.000.
Hormon-Chemie Munchen GmbH: *See*—
Zimmerman, Eberhard; and Schiele, Ulrich, 4,453,939, Cl. 604-368.000.
Horrocks, Frederick J.: *See*—
Goulette, Michael J.; and Horrocks, Frederick J., 4,453,588, Cl. 164-352.000.
Horsting, John J., to Bendix Corporation, The. Fluid motor. 4,453,450, Cl. 91-5.000.
Horton, Paul L.: *See*—
Kraus, Charles E.; and Horton, Paul L., 4,453,427, Cl. 74-200.000.
Hoshino Gakki Company, Ltd.: *See*—
Hoshino, Yoshihiro, 4,453,446, Cl. 84-421.000.
Hoshino, Hiroshi: *See*—
Fujiwara, Yoshiro; Yamada, Sumio; Hoshino, Hiroshi; and Wakatsuki, Noboru, 4,454,444, Cl. 310-360.000.
Hoshino, Yoshihiro, to Hoshino Gakki Company, Ltd. Tom-tom holder. 4,453,446, Cl. 84-421.000.
Hosking, Michael B., to General Dynamics Electronics Division. Piezoelectric relay using Euler lever. 4,454,442, Cl. 310-328.000.
Hotta, Yoshihiko: *See*—
Suguro, Yoshihiro; Nagamoto, Masanaka; Motosugi, Takanori; Hotta, Yoshihiko; and Watanabe, Toshiyuki, 4,454,521, Cl. 346-208.000.
Houghton-Brown, Patrick D.; and Scott, Blayney J. Device for remotely steering a boat. 4,453,485, Cl. 114-144.00A.
Houser, Bernard R. Bingo game support kit. 4,453,714, Cl. 273-148.00A.
Hovan, Edward J.; and Neumayer, Richard R., to United Technologies Corporation. Nozzle for a coolable rotor blade. 4,453,888, Cl. 416-97.00R.
Howlett, James J.: *See*—
Zagranski, Raymond D.; and Howlett, James J., 4,453,378, Cl. 60-39.020.
HRI, Inc.: *See*—
Ganguli, Partha S., 4,454,240, Cl. 502-26.000.
Hsing, To R.: *See*—
Yip, Kwok L.; Hsing, To R.; Daniele, Joseph J.; and Ritter, Joachim A., 4,454,547, Cl. 358-293.000.
Huang, I-Der: *See*—
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,454,353, Cl. 568-454.000.
Teng, Harry H.; Huang, I-Der; and Labowsky, Hsuan L., 4,454,363, Cl. 585-428.000.
Hubel, Werner: *See*—
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,454,317, Cl. 544-193.000.
Huber, Siegfried, to Black & Decker Inc. Method of controlling the speed of a drill, hammer-drill, or rotary hammer and apparatus therefor. 4,454,459, Cl. 318-305.000.
Huddart, David, to U.S. Philips Corporation. Solenoid drive circuit. 4,454,558, Cl. 361-153.000.
Hudson, Colin M.: *See*—
Rabe, David L.; and Hudson, Colin M., 4,453,460, Cl. 100-73.000.
Hudson, William L.: *See*—
Sedillot, Francois G.; Hudson, William L.; and Castellan, Bernard, 4,453,859, Cl. 405-202.000.
Huggett, Richard D. J., to Lewmar Marine Ltd. Self-tailing winch. 4,453,701, Cl. 254-371.000.
Hughes Aircraft Company: *See*—
Bridges, William B.; and Popa, Adrian E., 4,453,802, Cl. 350-96.150.
Moulin, Norbert L., 4,453,795, Cl. 339-92.00M.
Hughes, Nathaniel, to Vortran Corporation. Vortex-generating medical products. 4,453,542, Cl. 128-200.210.
Hugo Brennenstuhl GmbH & Co. KG: *See*—
Hauser, Wolfgang, 4,454,456, Cl. 318-129.000.
Hulsey, Eldon E.; and Mast, Burton T., to Breston, Michael P.; Hulsey, Joe Lance; and Mast, Burton T. Gate and swing valve. 4,453,699, Cl. 251-63.400.
Hulsey, Joe Lance: *See*—
Hulsey, Eldon E.; and Mast, Burton T., 4,453,699, Cl. 251-63.400.
Hulsey, Tommy R., to Construction Fasteners, Inc. Screw fastener assembly, method of providing same, and fastener suitable for use therein. 4,453,361, Cl. 52-410.000.
Humber, Leslie G.: *See*—
Asselin, Andre A.; and Humber, Leslie G., 4,454,150, Cl. 424-274.000.
Huniu, Sam; and Bailey, William C., to United States of America, Air Force. Low heat loss laser combustion chamber. 4,453,914, Cl. 431-121.000.
Hurley, James R., to McGraw-Edison Company. Non-linear alternating current transducer. 4,454,557, Cl. 361-93.000.
Hutchison, Stanley O., to Chevron Research Company. Concentric tubing having bonded insulation within the annulus. 4,453,570, Cl. 138-149.000.
Hutmaker, Marlin L. Drainage control for compressed air system. 4,453,893, Cl. 417-279.000.
Hutson, Thomas, Jr.; and Hann, Paul D., to Phillips Petroleum Company. HF Alkylation process. 4,454,369, Cl. 585-719.000.
Huyck Corporation: *See*—
Thompson, Charles E., 4,453,573, Cl. 139-383.00A.
Hysan Corporation: *See*—
Berkeley, Bernard, 4,453,983, Cl. 134-22.140.
Icenbice, Howard, to Duffin, Lawrence H., Jr.; and Duffin, Alan C. Range-controlled rotary sprinkler. 4,453,673, Cl. 239-236.000.
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Aoyagi, Juuro; and Ichikawa, Toshizi, 4,453,940, Cl. 604-408.000.
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Ida, Masatoshi: *See*—
Hayashi, Asao; Oinoue, Kenichi; Aoki, Masahiro; Nakamura, Junichi; and Ida, Masatoshi, 4,453,818, Cl. 354-406.000.
Idemitsu Kosan Company Limited: *See*—
Origuchi, Shingo, 4,453,649, Cl. 221-26.000.
Igarashi, Seikoh: *See*—
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Iida, Yoshimitsu; Yoshizawa, Atsuko; Kujirai, Tatuo; and Ogasawara, Toshichika, to Chugai Seiyaku Kabushiki Kaisha. Prolonged-action multiple-layer tablets. 4,454,108, Cl. 424-16.000.
Iizuka, Yutaka: *See*—
Miyamoto, Masakatsu; Suzuki, Yoshiharu; Ojima, Masayoshi; Iizuka, Yutaka; Orita, Ryuzo; and Matsuo, Tadashi, 4,453,945, Cl. 8-543.000.
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Takeda, Koichi; Ikeda, Sadao; and Matsubara, Koichi, 4,453,395, Cl. 72-370.000.
Ikegami, Tadashi; and Takaya, Katsuhiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Catalyst for polymerization of olefins. 4,454,242, Cl. 502-113.000.
Ikesue, Masumi: *See*—
Sawayama, Noboru; and Ikesue, Masumi, 4,453,493, Cl. 118-658.000.
Illinois Tool Works Inc.: *See*—
Bakker, John A., 4,453,292, Cl. 24-115.00G.
Imazeki, Shuji: *See*—
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,454,057, Cl. 252-299.100.
Imbert, Jean-Maurice, to McNeil-Akron, Inc. Tire curing press. 4,453,902, Cl. 425-47.000.
Imperial Chemical Industries Plc: *See*—
Cheshire, Phillip, 4,454,307, Cl. 525-379.000.
Lewis, Terence, 4,454,073, Cl. 260-501.210.
Swallow, Douglas L., 4,454,157, Cl. 424-325.000.
Ina, Tatsuo. Tripod. 4,453,686, Cl. 248-168.000.
Inai, Yuichi: *See*—
Yamatsu, Isao; Inai, Yuichi; Suzuki, Takeshi; Abe, Shinya; Satoh, Masaru; and Seto, Naosuke, 4,454,126, Cl. 424-212.000.

Incorvia, Samuel A.: *See*—
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,453,955, Cl. 55-387.000.
Industrial Air Products, Inc.: *See*—
McDonald, Howard L.; and Petri, Richard P., 4,453,321, Cl. 34-182.000.
Inger, Siegfried; and Fink, Heinz, to Palitex Project-Company GmbH. Two-for-one twisting spindle. 4,453,377, Cl. 57-279.000.
Ingersoll-Rand Company: *See*—
Franks, Charles G., 4,453,625, Cl. 192-88.00B.
Ingram, Barry T.: *See*—
MacGilp, Neil A.; McRitchie, Allan C.; Ingram, Barry T.; and Hampton, John, 4,454,049, Cl. 252-8.800.
Ingram Corporation: *See*—
Frias, Robert; Cain, Troy D.; Gallagher, John J., Jr.; and Watson, William, 4,453,872, Cl. 414-22.000.
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Usui, Toshihiro; and Inomoto, Kiyoshi, 4,453,645, Cl. 220-22.000.
Inoue, Hiroshi. Endotracheal tube with movable endobronchial blocker for one-lung anesthesia. 4,453,545, Cl. 128-207.150.
Inoue, Nori, to Tokai Electric Wire Company Limited. Female electric connector. 4,453,799, Cl. 339-256.0SP.
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Inoue, Yasuhiko; Nishizaki, Tadao; and Taguchi, Satoshi, to Sumitomo Chemical Company, Limited. Process for producing o-methylated phenols. 4,454,357, Cl. 568-804.000.
Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See*—
Safonnikov, Anatoly N.; and Antonov, Anatoly V., 4,454,406, Cl. 219-73.100.
Institut Francais du Petrole: *See*—
Dawans, Francois; Binet, Daniel; Kohler, Norbert; and Vu, Quang D., 4,454,260, Cl. 523-130.000.
Institut Merieux, Societe Anonyme: *See*—
Galy, Michel G. H., 4,453,926, Cl. 604-47.000.
Institute PO Obleklo I Textil: *See*—
Andonov, Blagoy A.; and Pirgov, Yordan V., 4,453,678, Cl. 242-27.000.
Interactive Entertainment Corp.: *See*—
Stadnik, George O., 4,454,568, Cl. 362-32.000.
Interlake, Inc.: *See*—
Rasmussen, George E.; and Donkle, Lucius B., Jr., 4,453,641, Cl. 211-151.000.
Intermatic Incorporated: *See*—
Harney, Ralph P.; and Mensing, Clifford E., 4,454,505, Cl. 340-712.000.
International Business Machines Corporation: *See*—
Archer, James L.; Hampson, Richard A.; Matsuda, Susumu; and Yagi, Takashi, 4,453,842, Cl. 400-605.000.
Bradshaw, Richard L.; Falcone, Samuel J.; and Simonetti, Alexander, 4,454,282, Cl. 524-407.000.
Bushaw, Kenneth A.; and Woodward, Milton H., 4,454,575, Cl. 364-200.000.
Cason, William C.; White, Freddie R.; Adam, Thomas L.; and Levine, Lewis J., 4,454,592, Cl. 364-900.000.
Cornell, Robert W.; and Rex, Donald K., 4,453,660, Cl. 226-74.000.
Findlay, Hugh T.; and Jones, Keith A., 4,453,839, Cl. 400-120.000.
McInroy, John W.; Waldo, Paul D.; Elliott, Jo A.; Adam, Thomas L.; and White, Freddie R., 4,454,576, Cl. 364-200.000.
Mondou, Eugene R.; and Schneider, Frederick W., 4,453,984, Cl. 134-22.190.
Page, Howard L.; and Wingert, James A., 4,454,580, Cl. 364-200.000.
Pennington, Dale H., 4,454,549, Cl. 360-77.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Vock, Manfred H.; and Tyszkiewicz, Theodore J., 4,454,111, Cl. 424-58.000.
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., 4,453,909, Cl. 425-511.000.
Saumell, Luis E., 4,454,090, Cl. 264-154.000.
International Paper Company: *See*—
Gordon, Robert L., 4,453,666, Cl. 229-43.000.
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Heinzer, Hans E.; and Taylor, Donald L., 4,453,635, Cl. 206-408.000.
Panek, George J.; and Nieman, Gerald R., 4,453,793, Cl. 339-75.00M.
Shikasho, Satoru, 4,453,411, Cl. 73-709.000.
Internationale Octrooi Maatschappij "Octropa" BV: *See*—
Veldhuizen, Harmen; Streefkerk, Hendrik; and Van Der Tas, Gerhard, 4,453,874, Cl. 414-123.000.
Interpace Corporation: *See*—
Nestich, R. Frank; and Preston, Burton L., 4,453,560, Cl. 137-312.000.
Inui, Toshiharu: *See*—
Moriguchi, Haruhiko; Ohmori, Takashi; and Inui, Toshiharu, 4,454,516, Cl. 346-76.0PH.
Ioanesian, Jury R.; Popko, Valery V.; and Subkhangulov, Radik S. Turbodrills. 4,453,604, Cl. 175-107.000.
Ioffe, Zosim: *See*—
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,453,548, Cl. 128-421.000.
Iohara, Kohichi; and Matsui, Michikage, to Teijin Limited. Polyester multifilament yarn and a process for manufacturing the same. 4,454,196, Cl. 428-359.000.
Iovlev, Vladimir A.: *See*—
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury L.; Dashevsky, Grigory I.; and Iovlev, Vladimir A., 4,453,916, Cl. 432-197.000.
Iowa State University Research Foundation, Inc.: *See*—
Angus, William G.; Rathe, Richard D.; and Fox, Daniel J., 4,453,620, Cl. 188-112.00R.
Demirel, Turgut; and Enustun, Bekir V., 4,453,398, Cl. 73-38.000.
Isaka, Masayoshi: *See*—
Nakamura, Kiyoshi; Isaka, Masayoshi; and Koike, Shigeyoshi, 4,454,457, Cl. 318-135.000.
Ishida, Tadao: *See*—
Fukuyama, Miyoji; and Ishida, Tadao, 4,454,262, Cl. 523-210.000.
Ishii, Keijiro; Nakatani, Keiji; and Yamagishi, Seiichi, to Minolta Camera Kabushiki Kaisha. Cartridge handling device for microfilm reader or the like. 4,453,682, Cl. 242-192.000.
Ishii, Yoshio: *See*—
Oda, Osamu; Noda, Hiroji; Iwase, Masaru; and Ishii, Yoshio, 4,454,389, Cl. 191-43.000.
Ishikawa, Shozo: *See*—
Takasu, Yoshio; and Ishikawa, Shozo, 4,454,211, Cl. 430-59.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Shimizu, Masami; and Nakamura, Fusayoshi, 4,453,837, Cl. 3.84-121.000.
Ishman, Paul A.: *See*—
Adkisson, James W.; and Ishman, Paul A., 4,453,848, Cl. 400-661.000.
Isobox S.A.: *See*—
Soulier, Joel, 4,454,081, Cl. 264-26.000.
Isolite Babcock Refractories Co., Ltd.: *See*—
Katagiri, Masayuki, 4,454,190, Cl. 428-281.000.
Itani, Takashi; Kozuki, Susumu; and Narasawa, Takashi, to Canon Kabushiki Kaisha. White balance control for color video camera. 4,454,532, Cl. 358-29.000.
Ito, Ren: *See*—
Shoji, Mitsuyoshi; Oe, Etsuo; Honma, Yoshiharu; Komatsuzaki, Shigeki; Sato, Moriichi; and Ito, Ren, 4,454,052, Cl. 252-68.000.
Ito, Teruyoshi; and Abe, Shigeya, to Nippondenso Co., Ltd. Ignition system including ignition distributor integrated with ignition coil. 4,453,526, Cl. 123-617.000.
Ito, Yasunobu; and Miki, Nobuaki, to Aisin Warner Kabushiki Kaisha. Method and a device for connecting electric cables used in a hydraulic system. 4,454,381, Cl. 174-151.000.
Itoh, Kiyohiko; Mikuni, Yoshihiko; and Sugita, Kensei, to Tokyo Shibaura Denki Kabushiki Kaisha. Strip antenna with polarization control. 4,454,514, Cl. 343-700.0MS.
ITT Industries, Inc.: *See*—
Elmis, Herbert; and Klar, Adrian, 4,454,531, Cl. 358-17.000.
Volkmar, Werner; and Schutt, Bernd, 4,454,393, Cl. 200-82.00R.
Ivano-Frankovsky Gosudarstvenny Meditsinsky Institut: *See*—
Genyk, Stepan N.; Krysa, Vasily M.; Zraiko, Mikhail V.; Vovk, Ljubomir G.; and Pyatiletov, Ivan I., 4,453,661, Cl. 227-19.000.
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., to Donetsky Politekhnichesky Institut. Sintering machine. 4,453,703, Cl. 266-157.000.
Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. D.C. Current detector. 4,454,553, Cl. 361-31.000.
Iwase, Masaru: *See*—
Oda, Osamu; Noda, Hiroji; Iwase, Masaru; and Ishii, Yoshio, 4,454,389, Cl. 191-43.000.
Iwata, Toshiharu: *See*—
Takasu, Yasuhito; Inoue, Shingo; and Iwata, Toshiharu, 4,453,521, Cl. 123-419.000.
Iyoda, Syozo: *See*—
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Syozo, 4,454,493, Cl. 337-368.000.
Izumi, Jun; Tsutaya, Hiroyuki; Amitani, Tatsuo; Kubo, Masayoshi; and Maehara, Kenichi, to TDK Corporation. Oxygen absorbent and process for the separation of oxygen and nitrogen using the same. 4,453,952, Cl. 55-68.000.
Izumi, Takayuki; Naito, Tsutomu; Nakamura, Tomoo; and Tanaka, Hisao, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing optically anisotropic carbonaceous pitch. 4,454,019, Cl. 208-22.000.
Izumi, Takayuki; Naito, Tsutomu; and Igarashi, Seikoh, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing a homogeneous low softening point, optically anisotropic pitch. 4,454,020, Cl. 208-22.000.
Jackson, Warren M., to Warren M. Jackson, Inc. Machine for assembling fastener blanks with washers. 4,453,308, Cl. 29-785.000.
Jacobs, Merle E., to Board of Overseers of Goshen College. Composition and process for producing pigmentation in hair or skin. 4,453,941, Cl. 8-424.000.
Jacques, Albert M. V., to Union Carbide Corporation. Process for preparing 2,5-dichloro-3-nitrobenzoic acid. 4,454,345, Cl. 562-410.000.
James, Stephen A., to Honeywell Inc. Electrical capacitor. 4,454,563, Cl. 361-306.000.

Jameson, James J.; Mount, Fred L.; and Fernandez, Joe L., to Cooper Industries, Inc. Output coupling for concrete mixer transmission. 4,453,830, Cl. 366-63.000.

Janes, Timothy W.; and White, John C., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method for producing a MISFET. 4,453,305, Cl. 29-571.000.

Jansen, Gert: *See*—
Clauson-Kaas, Niels; Jansen, Gert; and Olsen, Erik, 4,454,318, Cl. 544-241.000.

Janzen, Peter: *See*—
Astill, Cyril J.; and Janzen, Peter, 4,453,304, Cl. 29-421.00R.

Japan Atomic Energy Research Institute: *See*—
Tanaka, Ryuichi; Sunaga, Hiromi; Tamura, Naoyuki; and Murakami, Toshio, 4,454,421, Cl. 250-336.100.

Japan Synthetic Rubber Co., Ltd.: *See*—
Oka, Hiroshi; Yoshida, Yoshinori; and Naitou, Yuuzi, 4,454,310, Cl. 528-188.000.

Japanese National Railway: *See*—
Oda, Osamu; Noda, Hiroji; Iwase, Masaru; and Ishii, Yoshio, 4,454,389, Cl. 191-43.000.

Japenga, Robert J.: *See*—
Larson, John P.; and Japenga, Robert J., 4,453,963, Cl. 65-29.000.

Jeker, Rudolf: *See*—
Sander, Engelbert; and Jeker, Rudolf, 4,454,402, Cl. 219-10.530.

Jenck, Jean, to Rhone-Poulenc Chimie de Base. Palladium catalyzed carbonylation of conjugated dienes with catalyst recycle. 4,454,333, Cl. 560-1.000.

Jensen, Joergen S., to Bang and Olufsen A/S. Bias control method and apparatus for magnetic recording. 4,454,548, Cl. 360-66.000.

Jermansen, Torris G.: *See*—
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,454,353, Cl. 568-454.000.

Jeschke, Willi, to Heidelberger Druckmaschinen AG. Ink metering device in an ink duct for offset or letterpress printing machines. 4,453,467, Cl. 101-363.000.

Jespersen, Emil; and Singh, Bakshi B., to Dansk Industri Syndikat A/S. Method of producing frozen casting moulds. 4,453,586, Cl. 164-37.000.

Jocz, Armin E., to Westran Corporation. Torque overload indicator. 4,454,504, Cl. 340-665.000.

Joffe, Daniel M., to AT&T Bell Laboratories. Loop current detector with threshold setting impedance. 4,454,477, Cl. 328-149.000.

Johannes, Allan A.: *See*—
LeDoux, William D.; and Johannes, Allan A., 4,453,692, Cl. 248-552.000.

John Wyeth & Brother, Limited: *See*—
Ward, Terence J.; and Archibald, John L., 4,454,139, Cl. 424-258.000.

Johnson, Jack W., to Exxon Research and Engineering Co. Organometallic intercalates. 4,454,061, Cl. 252-625.000.

Johnson & Johnson: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; and Terry, Roger S., 4,453,276, Cl. 2-195.000.

Johnson, Leighton C., to Miles Laboratories, Inc. Capillary tube holder for liquid transfer in immunoassay. 4,454,235, Cl. 436-536.000.

Johnson, Michael R.: *See*—
Melvin, Lawrence S., Jr.; and Johnson, Michael R., 4,454,144, Cl. 424-263.000.

Johnson, Theodore C., Sr. Displaceable liner for unloading wheel supported receptacles. 4,453,875, Cl. 414-304.000.

Johnson, Zelma M. Method of treating psoriasis. 4,454,118, Cl. 424-95.000.

Johnston, Albert D.: *See*—
Baker, Steven F.; and Johnston, Albert D., 4,453,388, Cl. 70-165.000.

Johnston, Christian W.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,454,309, Cl. 525-454.000.

Jones, Floyd L.: *See*—
Watson, Keith M.; Jones, Floyd L.; and Adams, Dwight V., 4,453,911, Cl. 425-525.000.

Jones, Keith A.: *See*—
Findlay, Hugh T.; and Jones, Keith A., 4,453,839, Cl. 400-120.000.

Jongerling, Henry W.: *See*—
Bobick, Thomas W.; Clark, Frederic L.; Jongerling, Henry W.; Kockler, Barry C.; and Mitrovich, Svetislav, 4,453,841, Cl. 400-126.000.

Jonsson, Hans; Pettersson, Hans-Erik; and Andersson, Kennerth, to Svenska Mejeriernas Riksforenings Ekonomi AB. Aroma distillate and method for preparing same. 4,454,160, Cl. 426-34.000.

Jorgensen-Dahl, Jorgen. Apparatus for hauling in and winding up a fishing line with attached snells. 4,453,330, Cl. 43-6.500.

Josef Riepl Bau-AG, Firma: *See*—
Bretz, Helmut; and Eberle, Hubert, 4,453,861, Cl. 405-267.000.

Judd, Thomas H., to Bell Telephone Laboratories, Incorporated. Asynchronous data transmission method and circuitry. 4,454,383, Cl. 178-3.000.

JUhasz, Mihaly, to Energiagazdalkodasi Intezet. Gas- or oil-burning warm water, hot water or steam boiler. 4,453,498, Cl. 122-136.00R.

Julien, Paul C.: *See*—
Gruber, Robert J.; Julien, Paul C.; and Yourd, Raymond A., III, 4,454,214, Cl. 430-110.000.

Junkosha Co., Ltd.: *See*—
Suzuki, Hirosuke; Mizukami, Chiaki; and Sato, Yoshiaki, 4,454,249, Cl. 521-54.000.

Just, Gerhard: *See*—
Rau, Hans J.; and Just, Gerhard, 4,453,993, Cl. 156-124.000.

Just, Wilfried, to Mannesmann Aktiengesellschaft. Sheet metal clamping apparatus. 4,453,394, Cl. 72-302.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See*—
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; Sugimoto, Toshiyuki; and Sugimoto, Kaname, 4,454,161, Cl. 426-48.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Sakae, Mitsuhisa; and Hattori, Masaharu, 4,453,512, Cl. 123-198.00D.
Umano, Yasuhiro, 4,453,421, Cl. 73-862.540.

Kabushiki Kaisha Nichibei: *See*—
Nakajima, Akira; Furukawa, Takayoshi; Nakano, Atsuo; Yamashiro, Kunio; and Goda, Katsumi, 4,453,688, Cl. 248-262.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Suzuki, Masaru, 4,454,399, Cl. 200-314.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Arai, Tohru; and Sugimoto, Yoshihiko, 4,453,987, Cl. 148-15.500.

Kafko Manufacturing Limited: *See*—
Stefan, Gunter, 4,454,035, Cl. 210-117.000.

Kagaya, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Printing apparatus with coacting printer head movement and paper advancement. 4,454,517, Cl. 346-136.000.

Kagiura, Kazuo: *See*—
Miyake, Hiroyuki; Sagara, Seiji; Kagiura, Kazuo; Sasaki, Nobukazu; and Yonemori, Takaji, 4,453,824, Cl. 355-57.000.

Kai, Yoshinori: *See*—
Takagi, Yoshiaki; and Kai, Yoshinori, 4,454,329, Cl. 549-413.000.

Kain, Robert W. Camera having a remote control shutter release assembly. 4,453,815, Cl. 354-269.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Allen, Jim E.; and Martinet, Jacques R., 4,453,352, Cl. 52-98.000.
Cassens, Nicholas, Jr., 4,454,239, Cl. 501-99.000.

Kaji, Isao: *See*—
Takaoka, Michio; Ono, Motoyuki; and Kaji, Isao, 4,454,375, Cl. 174-73.00R.

Kajiwara, Ryoichi; Kokura, Satoshi; Kozono, Yuzo; and Onuma, Akira, to Hitachi, Ltd. Method for controlling arc welding and apparatus therefor. 4,454,408, Cl. 219-124.340.

Kamata, Hiroshi: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.

Kamatani, Hirovoshi: *See*—
Kuze, Katsuaki; Hashimoto, Hiroshi; Ohta, Takeshi; Akaishi, Tsukasa; Takeuchi, Kunio; and Kamatani, Hirovoshi, 4,454,312, Cl. 528-275.000.

Kamentseva, Svetlana A., administrator: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Sutlova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Kameswaran, Venkataraman, to American Cyanamid Company. Method for the resolution of racemic 2-(p-difluoromethoxyphenyl)-3-methylbutyric acid. 4,454,344, Cl. 562-401.000.

Kamohara, Shigeyoshi: *See*—
Noyori, Ryoji; Suzuki, Sakaru; Okayama, Minoru; Sakurai, Katukiyo; Kamohara, Shigeyoshi; and Ueno, Yoshio, 4,454,123, Cl. 424-180.000.

Kanada, Eiji: *See*—
Horii, Shoichi; Kanada, Eiji; and Nakatani, Mamoru, 4,454,216, Cl. 430-204.000.

Kanazawa, Hirotaka; Tanaka, Takeshi; Abe, Michio; and Maeda, Naoyuki, to Toyo Kogyo Co., Ltd.; and Tokai TRW & Co., Ltd. Power steering system for road vehicles. 4,453,615, Cl. 180-142.000.

Kanebo Ltd.: *See*—
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,454,258, Cl. 523-116.000.
Koyama, Hiroaki; and Shimizu, Shigeo, 4,454,298, Cl. 528-137.000.

Kanegafuchi Chkagaku Kogyo Kabushiki Kaisha: *See*—
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, 4,454,276, Cl. 524-209.000.

Kaneko, Fumihiko: *See*—
Hamuro, Mitsuro; and Kaneko, Fumihiko, 4,453,633, Cl. 206-330.000.

Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, to Hitachi Ltd.; and Mitsubishi Chemical Industries Limited. Liquid crystal composition. 4,454,057, Cl. 252-299.100.

Kaneko, Norio: *See*—
Shoji, Yoshihiko; Kaneko, Norio; and Kimura, Kazuo, 4,454,022, Cl. 208-48.00R.

Kaneko, Takashi: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,454,303, Cl. 525-211.000.

Kantz, Dieter: *See*—
Hoffmann, Kurt; and Kantz, Dieter, 4,454,431, Cl. 307-296.00R.

Karla, Heinz; and Roth, Mario, to Saint-Gobain Vitrage. Electrically heated glass pane. 4,453,669, Cl. 237-12.30R.

Karrenbauer, Kurt: *See*—
Behringer, Hartmut; Karrenbauer, Kurt; and Rehberg, Heinrich, 4,454,067, Cl. 260-176.000.

Karsten Manufacturing Corp.: *See—*
Solheim, Karsten; and Cotchonis, N. Eugene, 4,453,717, Cl. 273-192.000.
Karsunky, Ulrich: *See—*
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,454,279, Cl. 524-376.000.
Kashima Saddle Mfg. Co., Ltd.: *See—*
Kashima, Tetsuo, 4,453,765, Cl. 297-195.000.
Kashima, Tetsuo, to Kashima Saddle Mfg. Co., Ltd. Saddle for bicycle. 4,453,765, Cl. 297-195.000.
Kasiewicz, Stanley J. Control circuit for road and engine speed governor. 4,453,517, Cl. 123-352.000.
Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,453,287, Cl. 16-35.00R.
Kassai, Kenzou, to Kassai Kabushikikaisha. Caster for baby carriages. 4,453,287, Cl. 16-35.00R.
Katagiri, Masayuki, to Isolite Babcock Refractories Co., Ltd. Expandable ceramic fiber felt with graphite flakes. 4,454,190, Cl. 428-281.000.
Katchman, Arthur: *See—*
Cooper, Glenn D.; and Katchman, Arthur, 4,454,271, Cl. 525-132.000.
Kates, James M., to Signatron, Inc. Speech intelligibility enhancement. 4,454,609, Cl. 381-68.000.
Kathiria, Shabbir A., to Ford Motor Company. Floor console with latchable sliding tray. 4,453,759, Cl. 296-37.800.
Kato, Kazuo; Miyakawa, Nobuaki; Aihara, Makoto; and Matsubara, Kiyoshi, to Hitachi, Ltd. Analog data acquisition device. 4,454,500, Cl. 340-347.0AD.
Kato, Yasuo: *See—*
Takahashi, Susumu; Kato, Yasuo; Oana, Yoshinori; and Hatano, Yoshiyuki, 4,453,808, Cl. 351-208.000.
Katz, Michael: *See—*
Hinden, Jean; Katz, Michael; and Gauger, Jurgen, 4,454,169, Cl. 427-125.000.
Katz, Norman N. K.; and Przybyla, Vincent A., Jr., to United States of America, Army. Scleral depressor. 4,453,546, Cl. 128-303.00R.
Kaufman, Lazar. Protective device for the door-lock. 4,453,389, Cl. 70-416.000.
Kawada, Toshiyuki. Golf glove. 4,453,275, Cl. 2-161.00A.
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, to Kanebo Ltd. Resin-forming material, implant material and compositions for restorative material suitable for medical or dental use. 4,454,258, Cl. 523-116.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,453,441, Cl. 84-1.220.
Kawai, Yoshihiro, to Aisin Seiki Kabushiki Kaisha. Horizontally rotating looptaker for a sewing machine. 4,453,479, Cl. 112-231.000.
Kawai, Yukio: *See—*
Otsuki, Hiromi; Maruchi, Yoshiki; Kawai, Yukio; and Ogawa, Toshihisa, 4,453,700, Cl. 251-129.000.
Kawakami, Tomio: *See—*
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitoshi, 4,453,397, Cl. 73-23.000.
Kawamoto, Susumu: *See—*
Hino, Hiroyuki; Yamamoto, Kunio; Ozono, Ryuichi; Aratani, Hiroshi; and Kawamoto, Susumu, 4,453,393, Cl. 72-243.000.
Kawamura, Yoshihisa; and Dozono, Kichihiko, to Nissan Motor Company, Limited. Exhaust gas recirculation system for an internal combustion engine. 4,453,379, Cl. 60-278.000.
Kayen, Samuel L.: *See—*
Smilow, George; and Kayen, Samuel L., 4,453,655, Cl. 223-87.000.
Kazimir, Donald J., to Solar Development, Inc. Solar water heating system. 4,453,534, Cl. 126-420.000.
Keane, John J.: *See—*
Fox, Daniel W.; and Keane, John J., 4,454,278, Cl. 524-343.000.
Keblys, Kestutis A.: *See—*
Kolodchin, William; and Keblys, Kestutis A., 4,454,270, Cl. 524-102.000.
Keeffe, William M.: *See—*
English, George J.; Rothwell, Harold L., Jr.; and Keeffe, William M., 4,454,450, Cl. 313-620.000.
Keenan, John R., to General Signal Corporation. Universal ferrule or band clamp hose fitting. 4,453,746, Cl. 285-256.000.
Keiper Automobiltechnik GmbH & Co. KG: *See—*
Walk, Hansjorg; and Wingensiefen, Wilhelm, 4,453,767, Cl. 297-362.000.
Keller, Gunther: *See—*
Scheidler, Herwig; and Keller, Gunther, 4,453,533, Cl. 126-211.000.
Kelley Company, Inc.: *See—*
Erlandsson, Kjell I., 4,453,476, Cl. 110-346.000.
Kelley, David E.; and Quick, Willis K. Anti-jam blade assembly for refuse compactor. 4,453,879, Cl. 414-509.000.
Kellogg, Ronald E.; and Voss, Robert L., to Kelly Klosure Systems. Modular panel system for temporary buildings. 4,453,356, Cl. 52-293.000.
Kelly, James C.: *See—*
Garnett, Frederick W.; and Kelly, James C., 4,453,481, Cl. 112-288.000.
Kelly, John R., to United States of America, Navy. Electronic plug-in module extractor. 4,453,754, Cl. 294-15.000.
Kelly Klosure Systems: *See—*
Kellogg, Ronald E.; and Voss, Robert L., 4,453,356, Cl. 52-293.000.
Kelsey, Christopher G. Apparatus for the separation of particles from a slurry. 4,454,041, Cl. 210-235.000.
Kenny, Michael: *See—*
Slater, William; and Kenny, Michael, 4,453,988, Cl. 148-6.14R.
Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See—*
Kiefer, Hans; Rober, Hans-Gerd; and Reinhardt, Bernd, 4,454,587, Cl. 364-527.000.
Penzhorn, Ralf-Dieter; and Schuster, Peter, 4,454,062, Cl. 252-630.000.
Turowski, Peter, 4,454,380, Cl. 174-128.00S.
Kervennal, Jacques; Cognion, Jean-Marie; and Durual, Pierre, to Atochem. Process for the preparation of 2-benzoxazolone and derivatives from ortho-nitrophenols and carbon monoxide. 4,454,322, Cl. 548-221.000.
Kerwin, Richard G.: *See—*
Castel, John C.; and Kerwin, Richard G., 4,453,547, Cl. 128-421.000.
Key Pharmaceuticals, Inc.: *See—*
Tuttle, Ronald R., 4,454,142, Cl. 424-260.000.
Key, Worth M., to Burlington Industries, Inc. Method and apparatus for waste selvage removal. 4,453,572, Cl. 139-302.000.
Kharchenko, Ivan P.: *See—*
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.
Khoobiar, Sargis, to Halcon SD Group, Inc., The. Process for producing methacrylic acid. 4,454,346, Cl. 562-535.000.
Kiefer, Hans; Rober, Hans-Gerd; and Reinhardt, Bernd, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Method and circuit arrangement for discriminating between pulses generated by alpha and/or beta radiators. 4,454,587, Cl. 364-527.000.
Kiel, Bernd-Joachim: *See—*
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Lai, Kuo-Yann; Pierce, Robert C.; Dupre, Jean; and Killam, H. Scott, 4,454,060, Cl. 252-547.000.
Killop, Bradley V.; and Rogers, Robert R., to Robin Products Company. Guy wire protector. 4,453,353, Cl. 52-147.000.
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King, David G. Field game. 4,453,720, Cl. 273-411.000.
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Gilvarg, Charles; and Kingsbury, William D., 4,454,065, Cl. 260-112.50R.
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Miyazawa, Takashi, 4,454,542, Cl. 358-106.000.
Kirk, Kenneth H.; Fedde, George A.; and Gottschalk, Juan M., to Sperry Corporation. Automatic level control circuit. 4,454,540, Cl. 358-106.000.
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Kleinecke, John D.: *See*—
Little, Thomas R.; Kleinecke, John D.; and Farag, Samir F., 4,454,564, Cl. 361-336.000.
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Klima, Frank J. Sealed hard-rock drill bit. 4,453,836, Cl. 384-94.000.
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Kupper, Heinz, 4,453,510, Cl. 123-196.0AB.
Pluequet, Heinz, 4,453,511, Cl. 123-196.00S.
Klockner-Werke Aktiengesellschaft: *See*—
Koliwer, Wolfgang, 4,453,904, Cl. 425-119.000.
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Klotz, Marvin R., to Standard Oil Company (Indiana). Hydrocarbon conversion with a crystalline chromosilicate catalyst. 4,454,365, Cl. 585-480.000.
Klubovich, Vladimir V.; Basenok, Gennady S.; Konyshev, Leonid K.; Sidorenko, Valery A.; Gleb, Anatoly K.; Zinder, Anatoly M.; Konnikov, Mikhail N.; and Gorelik, Boris E., to Fiziko-Tekhnichesky Institut Akademii Nauk Belorusskoi SSR. Method of hardening shaped surfaces by plastic deformation. 4,453,392, Cl. 72-75.000.
Klukos, Edward. Hoop control guide. 4,453,341, Cl. 446-450.000.
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Knomark, Inc.: *See*—
Doggett, Roger H.; and Shanley, Edward S., 4,453,278, Cl. 4-228.000.
Knorr, Volker, to Gebr. Eickhoff Maschinefabrik und Eisengiesserei m.b.H. Driving arrangement for longwall mining machines. 4,453,774, Cl. 299-42.000.
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Saji, Hideo; Yamauchi, Yasutaka; and Kobashi, Mamoru, 4,453,515, Cl. 123-339.000.
Kobayashi, Akio; Yanabu, Satoru; and Yamashita, Shoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of and apparatus for synthetic testing of a multi-break circuit breaker. 4,454,476, Cl. 324-424.000.
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Shimura, Kisaburo; Utsuda, Tetsuji; Suda, Hironobu; and Kobayashi, Koji, 4,454,536, Cl. 358-76.000.
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Kobelt, Jacob. Self-aligning swivel assembly for push-pull cable control lever assembly. 4,453,428, Cl. 74-501.00R.
Koch, Richard C.: *See*—
Buennagel, James A.; and Koch, Richard C., 4,454,509, Cl. 340-825.690.
Kockler, Barry C.: *See*—
Bobick, Thomas W.; Clark, Frederic L.; Jongerling, Henry W.; Kockler, Barry C.; and Mitrovich, Svetislav, 4,453,841, Cl. 400-126.000.
Kodadek, Robert; and Welch, James H., to Herculite Products, Inc. Aerial spraying apparatus. 4,453,675, Cl. 239-675.000.
Koerner, Horst: *See*—
Romberg, Helmut; and Koerner, Horst, 4,453,577, Cl. 141-209.000.
Koester, Eberhard: *See*—
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Koga, Motoyuki, to Hakko Co., Ltd. Method for lining pipes of a pipeline. 4,454,174, Cl. 427-237.000.
Kogima, Tadao: *See*—
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Koharagi, Haruo: *See*—
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Sasamoto, Hisaya; Yamashita, Seiji; and Takahashi, Noriyoshi, 4,454,460, Cl. 318-491.000.
Kohler, Norbert: *See*—
Dawans, Francois; Binet, Daniel; Kohler, Norbert; and Vu, Quang D., 4,454,260, Cl. 523-130.000.
Kohn, Eric F.: *See*—
Petsch, Johann; and Kohn, Eric F., 4,454,573, Cl. 363-98.000.
Kohnke, Ole B.; and Ruben, Henning, to Testa-Laboratorium A/S. Anaesthesia—breathing apparatus. 4,453,543, Cl. 128-203.280.
Koike, Shigeyoshi: *See*—
Nakamura, Kiyoshi; Isaka, Masayoshi; and Koike, Shigeyoshi, 4,454,457, Cl. 318-135.000.
Koike, Tatsuhiro, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with game function. 4,453,439, Cl. 84-1.010.
Kokubo, Masahiro: *See*—
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,454,367, Cl. 585-533.000.
Kokura, Satoshi: *See*—
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Kolb, Bruno; Pospisil, Peter; and Auer, Maria, to Bodenseewerk Perkin-Elmer & Co., GmbH. Assembly for connecting the column ends of two capillary columns. 4,453,954, Cl. 55-386.000.
Koliwer, Wolfgang, to Klockner-Werke Aktiengesellschaft. Injection mold device for forming an article such as footwear. 4,453,904, Cl. 425-119.000.
Koller, Ernst. Structural element bar for buildings, or the like. 4,453,363, Cl. 52-481.000.
Kolodchin, William; and Keblys, Kestutis A., to Ethyl Corporation. Method and composition for preventing or suppressing discoloration in polyolefins. 4,454,270, Cl. 524-102.000.
Kolpe, Vasant V.: *See*—
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Komatsu, Hideo: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.
Komatsuzaki, Shigeki: *See*—
Shoji, Mitsuyoshi; Oe, Etsuo; Honma, Yoshiharu; Komatsuzaki, Shigeki; Sato, Moriichi; and Ito, Ren, 4,454,052, Cl. 252-68.000.
Komine, Shigeo; Morita, Kazuhiko; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,454,202, Cl. 428-423.100.
Kondo, Kiyoshi; and Matsui, Kiyohide, to FMC Corporation. Intermediates in a process for preparing dihalovinylcyclopropanecarboxylates. 4,454,343, Cl. 560-226.000.
Kongskilde Koncernselskab A/S: *See*—
Larsen, Bent H.; and Christensen, Kim I., 4,453,602, Cl. 172-707.000.
Konig, Heinz-Werner: *See*—
Bergemann, Klaus-Dieter; Kiel, Bernd-Joachim; Konig, Heinz-Werner; and Deike, Karl-Heinz, 4,453,736, Cl. 280-711.000.
Konig, Werner: *See*—
von der Ohe, Manfred; Flemming, Helmut; Siebelt, Dirk; Konig, Werner; and Solleder, Otto, 4,453,740, Cl. 280-781.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Hiraike, Fumiaki, 4,453,816, Cl. 354-271.100.
Konnikov, Mikhail N.: *See*—
Klubovich, Vladimir V.; Basenok, Gennady S.; Konyshev, Leonid K.; Sidorenko, Valery A.; Gleb, Anatoly K.; Zinder, Anatoly M.; Konnikov, Mikhail N.; and Gorelik, Boris E., 4,453,392, Cl. 72-75.000.
Kononenko, Vladimir N.: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.
Konrad, Charles E., to General Electric Company. Transistor fault indicator. 4,454,503, Cl. 340-648.000.
Konyshev, Leonid K.: *See*—
Klubovich, Vladimir V.; Basenok, Gennady S.; Konyshev, Leonid K.; Sidorenko, Valery A.; Gleb, Anatoly K.; Zinder, Anatoly M.; Konnikov, Mikhail N.; and Gorelik, Boris E., 4,453,392, Cl. 72-75.000.
Koob, Lothar, to Siemens Aktiengesellschaft. Circuit arrangement for a radiation detector. 4,454,423, Cl. 250-374.000.
Koomey, Inc.: *See*—
Henderson, Herman O., Jr.; LeMoine, Joseph L.; and Tomlin, Jerry B., 4,453,566, Cl. 137-614.020.
Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, 4,454,149, Cl. 424-273.00R.
Koppl, Franz: *See*—
Griesshammer, Rudolf; Koppl, Franz; Lorenz, Helmut; and Steudten, Friedrich, 4,454,104, Cl. 423-349.000.
Korach, Malcolm; and Pickens, Stanley R., to PPG Industries, Inc. Electro organic method and apparatus for carrying out same. 4,454,011, Cl. 204-59.00R.
Kosugi, Takumi: *See*—
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, 4,454,276, Cl. 524-209.000.
Kovalick, Albert W.: *See*—
Hassun, Roland; and Kovalick, Albert W., 4,454,486, Cl. 332-16.00R.
Kowalski, Werner: *See*—
Landgraber, Herbert; Kowalski, Werner; Scheffer, Johan; and Haas, Hans, 4,454,054, Cl. 252-135.000.
Koyama, Hiroaki; and Shimizu, Shigeo, to Kanebo Ltd. Granular or powdery phenol-aldehyde resin and process for production thereof. 4,454,298, Cl. 528-137.000.
Koyano, Akio, to Sumitomo Special Metal Co., Ltd. Piezoelectric transducer for piezoelectric loud speaker. 4,454,386, Cl. 179-110.00A.
Kozono, Yuzo: *See*—
Kajiwara, Ryoichi; Kokura, Satoshi; Kozono, Yuzo; and Onuma, Akira, 4,454,408, Cl. 219-124.340.
Kozuka, Michihiro; and Tonokura, Masayuki, to Tomy Kogyo Co., Inc. Toy having moving modes dependent upon location of moving member. 4,453,340, Cl. 446-437.000.

Kozuki, Susumu: *See*—
Itani, Takashi; Kozuki, Susumu; and Narasawa, Takashi, 4,454,532, Cl. 358-29.000.
Krasavtsev, Igor N.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
Krasij, Bohdan; and Mune, Charles, to Carlingswitch, Inc. Adapter plate assembly for circuit breaker. 4,454,565, Cl. 361-376.000.
Kraus, Charles E.; and Horton, Paul L., to Excelermatic Inc. Infinitely variable traction roller transmission. 4,453,427, Cl. 74-200.000.
Kreimes, Norbert: *See*—
Reimer, Karl-Juergen; Pfefferkorn, Dietmar; Koester, Eberhard; Kreimes, Norbert; Andriessen, Wilhelmus; Wagner, Herbert; and Wagner, Werner, 4,453,683, Cl. 242-199.000.
Krob, Erwin, to TMC Corporation. Ski brake. 4,453,731, Cl. 280-605.000.
Krugener, Rolf: *See*—
Gmeiner, Gunter; and Krugener, Rolf, 4,454,390, Cl. 200-6.00A.
Kruse, Lawrence I., to SmithKline Beckman Corporation. Semicarbazide intermediates for preparing 4-substituted indoles. 4,454,337, Cl. 560-22.000.
Krux, Peter, to Uhde GmbH. Damping device for machine sets having a vertical rotor shaft. 4,453,693, Cl. 248-559.000.
Krysa, Vasily M.: *See*—
Genyk, Stepan N.; Krysa, Vasily M.; Zraiko, Mikhail V.; Vovk, Ljubomir G.; and Pyatiletov, Ivan I., 4,453,661, Cl. 227-19.000.
Kuan, Tiong H.; Pantuso, Joseph; and Sommer, John G., to General Tire & Rubber Company, The. Method of making a pneumatic tire having a lubricant-containing pocket integrally formed therein. 4,453,992, Cl. 156-115.000.
Kubo, Masayoshi: *See*—
Izumi, Jun; Tsutaya, Hiroyuki; Amitani, Tatsuo; Kubo, Masayoshi; and Maehara, Kenichi, 4,453,952, Cl. 55-68.000.
Kudo, Shozo: *See*—
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,454,258, Cl. 523-116.000.
Kuehn, Joseph R. Dispensing package for rolled sheet material. 4,453,657, Cl. 225-65.000.
Kuhfuss, Runwalt, to De La Rue Giori S.A. Method and device for automatically processing sheet piles of numbered multiple-note security papers, notably banknotes, into bundle packets. 4,453,707, Cl. 270-60.000.
Kuhlmann, Herbert; and Rieger, Kurt, to Sidepal S.A. Cooled tube wall for metallurgical furnace. 4,453,500, Cl. 122-510.000.
Kuhn, John B., to Deere & Company. Quick-release shield mounting. 4,453,374, Cl. 56-320.100.
Kujirai, Tatuo: *See*—
Iida, Yoshimitsu; Yoshizawa, Atsuko; Kujirai, Tatuo; and Ogasawara, Toshichika, 4,454,108, Cl. 424-16.000.
Kumakura, Yoshiyuki: *See*—
Harada, Yuho; Maruyama, Tsutomu; Kumakura, Yoshiyuki; and Kuwayama, Shigeo, 4,453,962, Cl. 65-3.150.
Kumata, Ken: *See*—
Hidaka, Takehiko; Morikawa, Takitaro; Shimada, Junichi; and Kumata, Ken, 4,453,803, Cl. 350-96.320.
Kummer, Rudolf; Taglieber, Volker; and Schneider, Heinz-Walter, to BASF Aktiengesellschaft. Continuous production of ethanol and plural stage distillation of the same. 4,454,358, Cl. 568-885.000.
Kummer, Werner: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, 4,454,149, Cl. 424-273.00R.
Kupper, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Reciprocating piston internal combustion engine. 4,453,510, Cl. 123-196.0AB.
Kurima, Akinori: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.
Kurtz, Leonard D.; and LiCause, Joseph, to BioResearch Inc. Drainage device with flow meter. 4,453,937, Cl. 604-319.000.
Kurumi, Masateru: *See*—
Fujii, Setsuro; Okutome, Toshiyuki; Nakayama, Toyoo; Yaegashi, Takashi; and Kurumi, Masateru, 4,454,338, Cl. 560-34.000.
Kurusu, Toshiro: *See*—
Sato, Jinichi; Kurusu, Toshiro; Ota, Masao; and Mizutani, Terumasa, 4,454,165, Cl. 426-592.000.
Kut-Kwick Corporation: *See*—
Torras, Robert M., 4,453,739, Cl. 280-755.000.
Kutscher, Hans L.: *See*—
Achtermann, Bernhard; Kutscher, Hans L.; and Lankes, Hans, 4,454,469, Cl. 324-61.00P.
Kuwana, Kazutaka; Ueda, Masahiro; and Nonoyama, Seiji, to Seiki Kabushikikaisha; and Toyota Jidosha Kogyo Kabushikikaisha. Road vehicle level controller. 4,453,725, Cl. 280-6.00R.
Kuwana, Noriaki: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,454,330, Cl. 549-420.000.
Kuwayama, Shigeo: *See*—
Harada, Yuho; Maruyama, Tsutomu; Kumakura, Yoshiyuki; and Kuwayama, Shigeo, 4,453,962, Cl. 65-3.150.
Kuze, Katsuaki; Hashimoto, Hiroshi; Ohta, Takeshi; Akaishi, Tsukasa; Takeuchi, Kunio; and Kamatani, Hirovoshi, to Toyo Boseki Kabushiki Kaisha. Biaxially stretched polyester films. 4,454,312, Cl. 528-275.000.
L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques: *See*—
Colin, Gerard; and Reamot, Herve, 4,454,468, Cl. 323-365.000.
Labowsky, Hsuan L.: *See*—
Teng, Harry H.; Huang, I-Der; and Labowsky, Hsuan L., 4,454,363, Cl. 585-428.000.
Ladish Co.: *See*—
Zimmerly, Robert D., 4,453,901, Cl. 418-206.000.
LaFlame, Thomas R. Carrier for a percussion instrument. 4,453,442, Cl. 84-421.000.
Laganis, Deno; and Yodis, John, to Schenectady Chemicals, Inc. Electrical conductor coated with a water-borne hermetic varnish. 4,454,197, Cl. 428-379.000.
Lagoni, William A., to RCA Corporation. Vertical detail coring circuit to track a gain adjusted signal. 4,454,533, Cl. 358-31.000.
Lagus, Peter L.; and Peterson, Edward W., to Maxwell Laboratories, Inc. Method of measuring fracture pressure in underground formations. 4,453,595, Cl. 166-250.000.
Lai, Kuo-Yann; Pierce, Robert C.; Dupre, Jean; and Killam, H. Scott, to Colgate-Palmolive Company. Liquid detergent composition with a cationic foam stabilizing copolymer containing pendant quaternary nitrogen groups and pendant hydrophobic groups. 4,454,060, Cl. 252-547.000.
Laing, John G.: *See*—
Blatt, Leland F.; and Laing, John G., 4,453,755, Cl. 294-64.00A.
La Mantia, Giuseppe: *See*—
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,453,956, Cl. 62-18.000.
La Mers, Herbert. Labelling system. 4,454,180, Cl. 428-42.000.
Landa, Benzion, to Savin Corporation. Improved composition for developing latent electrostatic images for gap transfer to a carrier sheet. 4,454,215, Cl. 430-115.000.
Landell, Harper, to Woodstream Corporation. Mounting arrangement for tablet-like rust inhibitor. 4,453,786, Cl. 312-31.100.
Landgraber, Herbert; Kowalski, Werner; Scheffer, Johan; and Haas, Hans, to Hoechst Aktiengesellschaft. Sodium tripolyphosphate, process for making it, and its use. 4,454,054, Cl. 252-135.000.
Landis, John M.: *See*—
Asick, John C.; Landis, John M.; and Snyder, Clair W., Jr., 4,453,798, Cl. 339-143.00R.
Landstingens Inkopscentral, LIC, Ekonomisk Forening: *See*—
Brendling, Lennart I., 4,453,938, Cl. 604-346.000.
Lankes, Hans: *See*—
Achtermann, Bernhard; Kutscher, Hans L.; and Lankes, Hans, 4,454,469, Cl. 324-61.00P.
Larsen, Bent H.; and Christensen, Kim I., to Kongskilde Koncernselskab A/S. Resilient harrow tine. 4,453,602, Cl. 172-707.000.
Larsen, Kurt K., to Blue Giant Equipment of Canada Ltd. Dock leveller releasable from dock installation. 4,453,282, Cl. 14-71.100.
Larsen, Robert H.; and Giaimo, Anthony, to Singer Company, The. Thread tensioning module for a sewing machine. 4,453,480, Cl. 112-254.000.
Larson, John P.; and Japenga, Robert J., to Emhart Industries, Inc. Method and apparatus for controlling the delivery of gobs to a section of a glassware forming machine. 4,453,963, Cl. 65-29.000.
Laser Drive, Inc.: *See*—
Thackray, Philip C., 4,454,492, Cl. 336-69.000.
Last, Anthony J.; and Chato, John D., to B O Development Enterprises Ltd. Disc-shaped M.H.D. generator. 4,454,436, Cl. 310-11.000.
Laszczower, Max, to Solco Basel AG. Device for pinching-off hoses. 4,453,295, Cl. 251-10.000.
Laub, Leonard: *See*—
Nayak, Ashok B.; and Laub, Leonard, 4,454,415, Cl. 250-201.000.
Laurien, Rolf: *See*—
Mateika, Dieter; and Laurien, Rolf, 4,454,206, Cl. 428-692.000.
Lawrence, William D.: *See*—
Hoffman, Craig A.; and Lawrence, William D., 4,453,326, Cl. 40-377.000.
Lawson, David F., to Firestone Tire & Rubber Company, The. Polymers having reduced carbon monoxide generation upon burning. 4,454,280, Cl. 524-398.000.
Lazarus, Jack H.: *See*—
Barry, Richard H.; and Lazarus, Jack H., 4,454,152, Cl. 424-283.000.
Leban, Marzio A.: *See*—
Hackleman, David E.; Nielsen, Ralph H., Jr.; and Leban, Marzio A., 4,454,004, Cl. 156-643.000.
Lebanon Packaging Corporation: *See*—
Mark, Frederick K., 4,453,631, Cl. 206-313.000.
Lechner, Uwe: *See*—
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.
Ledbetter, James A., to Cooper Industries, Inc. Booster cable clamp for side terminal and standard battery posts. 4,453,791, Cl. 339-29.00B.
Leddet, Philippe, to Regie Nationale des Usines Renault. Device and process for automatic setting of a window element, headlining or the like. 4,453,303, Cl. 29-407.000.
LeDoux, William D.; and Johannes, Allan A. Security device. 4,453,692, Cl. 248-552.000.
Lee, Cheuk-Ming, to Refined Industry Company Limited, The. Drive system for toy cars. 4,453,712, Cl. 273-86.00B.

Lee, John K. Air charger for internal combustion engines. 4,453,524, Cl. 123-556.000.
Lee, Kenneth M.; and Ulman, Katherine L., to Dow Corning Corporation. Surface treatment of inorganic fillers. 4,454,288, Cl. 524-588.000.
Leesona Corporation: *See*—
Smith, David J.; Scharenberg, R. Ted; and Beck, William W., 4,454,084, Cl. 264-40.100.
LeGresley, Barry P., to AEL Microtel Limited. Parallel cyclic redundancy checking circuit. 4,454,600, Cl. 371-25.000.
Lehman, James A. Finger flicker saucer with spring powered tab. 4,453,338, Cl. 446-46.000.
Leisse, Norbert, to Fahrzeugbau Haller GmbH. Control device for a loading device for bulk goods containers. 4,453,880, Cl. 414-525.00R.
Leka, George T.; and Paradis, Roland C., to Perkin-Elmer Corporation, The. Dual-piston reciprocating pump assembly. 4,453,898, Cl. 417-521.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
de Lozanne, Alejandro L., 4,454,522, Cl. 357-5.000.
LeMoine, Joseph L.: *See*—
Henderson, Herman O., Jr.; LeMoine, Joseph L.; and Tomlin, Jerry B., 4,453,566, Cl. 137-614.020.
Lenarduzzi, Roberto: *See*—
Heffron, Charles B.; Lenarduzzi, Roberto; and Haken, Jack E., 4,454,594, Cl. 364-900.000.
Lepone, Gerald E., to Du Pont de Nemours, E. I., and Company. Organotin insecticidal sulfonamides. 4,454,135, Cl. 424-245.000.
Leslie Hartridge, Ltd.: *See*—
Bussey, Stephen; Cockburn, Barry; and Heath, Alastair E. F., 4,453,403, Cl. 73-119.00A.
Lever Brothers Company: *See*—
Borovian, Gayle E., 4,454,146, Cl. 424-270.000.
DeMasi, Dominick F.; and Scheideler, Gregg S., 4,453,979, Cl. 106-188.000.
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Cason, William C.; White, Freddie R.; Adam, Thomas L.; and Levine, Lewis J., 4,454,592, Cl. 364-900.000.
Levitt, George; Yeh, Chin-Lung; and Budzinski, John C., to Du Pont de Nemours, E. I., and Company. Herbicidal triazinyl sulfonamides. 4,453,970, Cl. 71-93.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,453,971, Cl. 71-93.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Substituted benzene sulfonyl isocyanates as intermediates to herbicidal sulfonamides. 4,454,335, Cl. 560-12.000.
Levreault, John E.: *See*—
Allfather, Lars P.; and Levreault, John E., 4,454,480, Cl. 330-297.000.
Lewis, Frederick M., to Sterling Drug, Inc. Method for controlling temperatures in the afterburner and combustion hearths of a multiple hearth furnace. 4,453,474, Cl. 110-188.000.
Lewis, Gary D., to Energy Conversion Devices, Inc. Apparatus for producing microform records from multiple data sources. 4,453,822, Cl. 355-43.000.
Lewis, Harold F., to Rockwell International Corporation. Shielded amplifier. 4,454,481, Cl. 330-307.000.
Lewis, Terence, to Imperial Chemical Industries PLC. N-[Carboxyl(-carbamoyl)carbonyl)-aminomethyl phosphonic acids. 4,454,073, Cl. 260-501.210.
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Huggett, Richard D. J., 4,453,701, Cl. 254-371.000.
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Welter, Andre; Leyck, Sigurd; and Etschenberg, Eugen, 4,454,068, Cl. 260-239.00R.
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Wunsch, Reinhold; and Lezius, Albrecht, 4,454,596, Cl. 364-900.000.
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Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., 4,453,909, Cl. 425-511.000.
LiCause, Joseph: *See*—
Kurtz, Leonard D.; and LiCause, Joseph, 4,453,937, Cl. 604-319.000.
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Marschall, Peter; Schlosser, Ewald; and Wolk, Claus, 4,454,603, Cl. 372-46.000.
Liebig, Lothar: *See*—
Lindner, Christian; Liebig, Lothar; and Ott, Karl-Heinz, 4,454,305, Cl. 525-310.000.
Liechti, Peter; Clement, Antoine; Eugster, Peter; and Meyer, Kurt, to Ciba-Geigy Corporation. Dye stable to dyeing, processes for producing it, and its use for dyeing and printing synthetic and semi-synthetic fibre materials. 4,453,944, Cl. 8-526.000.
Liette, Roger H.: *See*—
Opperman, Paul; and Liette, Roger H., 4,453,334, Cl. 43-42.130.
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Srinivasan, Nallaswamy; Lijewski, Robert R.; Collins, Arthur K.; and Morse, Royal R., III, 4,454,507, Cl. 340-744.000.
Lilie-Hoffmann Cooling Towers, Inc.: *See*—
Hoffmann, Paul D., 4,454,079, Cl. 261-111.000.
Lindau, Leif V.; and Ahman, Stefan O. H., to Flakt Aktiebolag. Method of purifying flue gases from sulphur dioxide. 4,454,102, Cl. 423-244.000.
Lindauer, Jerome I.; Hill, Ira D.; and Liberman, Arthur L., to International Flavors & Fragrances Inc. Apparatus for making soap with perfumed insert. 4,453,909, Cl 425-511.000.
Lindblom, Fritz, Jr. Water heater for use in fireplace. 4,453,532, Cl. 126-132.000.
Linden, Gerbert: *See*—
Schroder, Ludwig; Stransky, Werner: Mengel, Rudolf; and Linden, Gerbert, 4,453,972, Cl. 71-94.000.
Lindner, Christian; Liebig, Lothar; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Rubber dispersions II. 4,454,305, Cl. 525-310.000.
Lindner, Tassilo: *See*—
Zeller, Norbert; Riedle, Rudolf; Lindner, Tassilo; and Wagner, Wolfgang, 4,454,331, Cl. 556-448.000.
Link, Elizabeth T., executrix: *See*—
Dueber, Thomas E.; and Link, William J., deceased, 4,454,218, Cl. 430-277.000.
Link, Otmar, to Azo-Maschinenfabrik Adolf Zimmermann GmbH. Plant for supplying heating systems with solid flowable fuel. 4,453,473, Cl. 110-106.000.
Link, William J., deceased: *See*—
Dueber, Thomas E.; and Link, William J., deceased, 4,454,218, Cl. 430-277.000.
Lissy, James. Rotary adjusting tool for use in inaccessible areas. 4,453,434, Cl. 81-57.290.
Little, Thomas R.; Kleinecke, John D.; and Farag, Samir F., to Siemens-Allis, Inc. Fabricated carriage assembly for high voltage contactor. 4,454,564, Cl. 361-336.000.
Litz, Lawrence M., to Union Carbide Corporation. Process and apparatus for mixing a gas and a liquid. 4,454,077, Cl. 261-91.000.
Liu, Ping Y., to General Electric Company. Glass reinforced polyolefin composites modified with aromatic polycarbonates. 4,454,287, Cl. 524-508.000.
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Sletzinger, Meyer; and Shinkai, Ichiro, to Merck & Co., Inc. Hydroxy amino dicarboxylic acids and esters. 4,454,332, Cl. 560-039.000.
LiVolsi, William J.: *See*—
Kleykamp, Donald L.; McCord, Steven G.; LiVolsi, William J.; and Trueblood, Raymond L., 4,453,289, Cl. 24-20.0TT.
Lobiondo, Joseph V.: *See*—
Lobiondo, Salvatore J.; and Lobiondo, Joseph V., 4,453,288, Cl. 17-26.000.
Lobiondo, Salvatore J.; and Lobiondo, Joseph V. Jam resistant apparatus for macerating meat. 4,453,288, Cl. 17-26.000.
Location de Couches Hospitalieres Dagenais Ltd.: *See*—
Dagenais, Roger J.; Dagenais, Jacques; and Poirier, Paul, 4,454,182, Cl. 428-74.000.
Loge, Olaf: *See*—
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.
Logsdon, Hartley. Bath rack assembly. 4,453,279, Cl. 4-559.000.
Lohmann GmbH & Co. KG: *See*—
Blumenthal, Klaus, 4,453,634, Cl. 206-389.000.
Loizeau, Pierre, to Valeo. Torsion damping assembly and radially deformable bearing therefor. 4,453,838, Cl. 384-125.000.
Lokh, Igor A.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
London, Joe F., Jr.; and Pugh, Charles D., to Burlington Industries, Inc. Novelty yarn production. 4,453,297, Cl. 28-163.000.
Long Manufacturing Co., Inc.: *See*—
Atkinson, Wallace E., 4,453,387, Cl. 70-75.000.
Lonnroth, Aarne. Goods wagon unloading mechanism. 4,453,871, Cl. 414-384.000.
Lorek, Georges; and Blondet, Joel C. F., to Shell Oil Company. Nozzle for a burner operating on liquefied petroleum gas. 4,453,674, Cl. 239-483.000.
Lorenz, Adrian: *See*—
Gahwiler, Hermann; and Lorenz, Adrian, 4,453,934, Cl. 604-191.000.
Lorenz, Helmut: *See*—
Griesshammer, Rudolf; Koppl, Franz; Lorenz, Helmut; and Steudten, Friedrich, 4,454,104, Cl. 423-349.000.
Lorenz, Karl: *See*—
Lorenzini, Robert E.; Bonora, Anthony C.; and Lorenz, Karl, 4,454,096, Cl. 422-249.000.
Lorenzini, Robert E.; Bonora, Anthony C.; and Lorenz, Karl, to Siltec Corporation. Crystal growth furnace recharge. 4,454,096, Cl. 422-249.000.
Lou, Perry W., to Texas Instruments Incorporated. Interface system for bus line control. 4,454,591, Cl. 364-900.000.
Lovell, James B., to American Cyanamid Co. Insecticidal pyrethroid compositions. 4,454,127, Cl. 424-218.000.
Lowden, Roger G. Fish line release mechanism. 4,453,336, Cl. 43-43.120.
Lowe, James R., to McDonald Douglas Corporation. Conformal head-up display. 4,454,496, Cl. 340-980.000.
Lowicki, Norbert; and Desai, Natvarlal B., to Grillo-Werke Aktiengesellschaft. Zinc salt of a hydrolyzed tricarboxylic acid from ene-adducts of maleic anhydride to undecylenic acid. 4,454,153, Cl. 424-289.000.
Lubrizol Corporation, The: *See*—
Pindar, John F.; Cohen, Jerome M.; and Bryant, Charles P., 4,454,059, Cl. 252-51.50R.

Lucas Industries Limited: *See*—
MacFarlane, Charles T.; and Adams, Graham L., 4,453,520, Cl. 123-387.000.

Lucas Industries plc: *See*—
Williams, David E.; Tofield, Bruce C.; and McGeehin, Peter, 4,454,494, Cl. 338-34.000.

Lucken, Wesley O. Occupant propellable wheelchair. 4,453,729, Cl. 280-242.0WC.

Luder, Rainer; and Haussmann, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for filtering the luminance signal from ACCVS television signal. 4,454,534, Cl. 358-31.000.

Luebbe, Ray H., Jr., to Exxon Research and Engineering Co. Lyophilization process for preparing composite particles for use in electroconductive transfer films and products produced therewith. 4,454,194, Cl. 428-323.000.

Lukaszek, Theodore J.; and Ballato, Arthur, to United States of America, Army. Quartz resonators for acceleration environments. 4,454,443, Cl. 310-348.000.

Lukyanchenko, Leonid F.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.

Lukyanov, Anatoly A.: *See*—
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.

Lund, John A.; Richardson, David L.; and Stubbs, Graham S., to Oak Industries Inc. Dynamic video scrambling. 4,454,543, Cl. 358-118.000.

Lutz, Irvin H., to Alberta Oil Sands Technology & Research Authority. Process for upgrading a heavy viscous hydrocarbon. 4,454,023, Cl. 208-96.000.

Lymburner, Charles J.: *See*—
Brown, Richard A.; Caropreso, Frank E.; Lymburner, Charles J.; and Norris, Robert D., 4,453,597, Cl. 166-303.000.

Lynch, William T.; and Vratny, Frederick, to AT&T Bell Laboratories. Fabrication of FETs. 4,453,306, Cl. 29-571.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, 4,453,465, Cl. 101-228.000.

M. E. Canfield Company: *See*—
Ward, Leonard H., 4,453,472, Cl. 108-107.000.

Mabu, Osamu: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.

MAC Valves, Inc.: *See*—
Neff, James A., 4,453,565, Cl. 137-596.000.
Neff, James A., 4,453,697, Cl. 251-14.000.

MacDonald, Robert D., to Masco Corporation. Valve assembly. 4,453,567, Cl. 137-614.110.

MacFarlane, Charles T.; and Adams, Graham L., to Lucas Industries Limited. Liquid fuel pumping apparatus. 4,453,520, Cl. 123-387.000.

MacGilp, Neil A.; McRitchie, Allan C.; Ingram, Barry T.; and Hampton, John, to Procter & Gamble Company, The. Textile treatment compositions. 4,454,049, Cl. 252-8.800.

Machida, Toyotaka, to Victor Company of Japan, Limited. Color picture projection system. 4,454,535, Cl. 358-60.000.

MacInnis, Martin B.: *See*—
Scheithauer, Richard A.; Vanderpool, Clarence D.; Miller, Michael J.; and MacInnis, Martin B., 4,454,098, Cl. 423-55.000.

Madding, Gary D., to Mead Johnson & Company. Process for production of encainide. 4,454,324, Cl. 546-337.000.

Madgavkar, Ajay M.: *See*—
Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., 4,454,366, Cl. 585-525.000.

Maeba, Kazuhiko, to Hitachi, Ltd. Audio response apparatus. 4,454,608, Cl. 381-51.000.

Maeda, Naoyuki: *See*—
Kanazawa, Hirotaka; Tanaka, Takeshi; Abe, Michio; and Maeda, Naoyuki, 4,453,615, Cl. 180-142.000.

Maehara, Kenichi: *See*—
Izumi, Jun; Tsutaya, Hiroyuki; Amitani, Tatsuo; Kubo, Masayoshi; and Maehara, Kenichi, 4,453,952, Cl. 55-68.000.

Maejima, Hideo: *See*—
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Maeshima, Tsugio: *See*—
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,454,367, Cl. 585-533.000.

Magnaflux Corporation: *See*—
Rosauer, Peter J., 4,454,473, Cl. 324-262.000.

Maguire, Paul R. Lighting fixture primarily adapted for use in association with modular office furniture. 4,454,569, Cl. 362-127.000.

Mahl, Maurice: *See*—
Thuries, Edmond; Mahl, Maurice; Masson, Jean-Paul; and Malik, Louis, 4,453,679, Cl. 242-54.00A.

Mahon, Jean, to Societe Anonyme Couvrot Laine & Cie. Mixer with a fixed drum. 4,453,831, Cl. 366-65.000.

Maier, Franz: *See*—
Schindler, Erich; and Maier, Franz, 4,454,085, Cl. 264-41.000.

Maier, Roland: *See*—
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.

Major, Granville M., Jr.: *See*—
Major, Johnny D.; and Major, Granville M., Jr., 4,454,515, Cl. 343-882.000.

Major, Johnny D.; and Major, Granville M., Jr. Antenna mount. 4,454,515, Cl. 343-882.000.

Makita, Teruo: *See*—
Kawahara, Haruyuki; Makita, Teruo; Kudo, Shozo; and Funakoshi, Takashi, 4,454,258, Cl. 523-116.000.

Malik, Louis: *See*—
Thuries, Edmond; Mahl, Maurice; Masson, Jean-Paul; and Malik, Louis, 4,453,679, Cl. 242-54.00A.

Malyarchuk, Alexei A.: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Mang, Josef, to Emerson Electric Co. Longreach linear pick-and-place assembly apparatus. 4,453,882, Cl. 414-728.000.

Mannesmann AG: *See*—
Heinrich, Bruno; and Schwenk, Wilhelm, 4,454,172, Cl. 427-234.000.

Mannesmann Aktiengesellschaft: *See*—
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Marchenkov, Nikolai B.: *See*—
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Marhefka, Matthew D.: *See*—
Cohen, Joel B.; and Marhefka, Matthew D., 4,453,790, Cl. 312-348.000.

Mark, Frederick K., to Lebanon Packaging Corporation. Phonograph record album and slip case. 4,453,631, Cl. 206-313.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Rubbery polyarylates. 4,454,308, Cl. 525-444.000.

Marlboro Marketing, Inc.: *See*—
Merl, Milton J., 4,454,410, Cl. 235-89.00R.

Marmonier, Andre: *See*—
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Marquart, John E.: *See*—
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Marsaud, Serge G.: *See*—
Goepfert, Serge; Marsaud, Serge G.; Renault, Serge A. M.; and Roger, Francoise M. M., 4,454,170, Cl. 427-160.000.

Marschall, Peter; Schlosser, Ewald; and Wolk, Claus, to LICENTIA Patent-Verwaltungs-GmbH. Semiconductor laser. 4,454,603, Cl. 372-46.000.

Marsh, Marion, to Scholl, Inc. Sandal having side wall for preventing pronation. 4,453,322, Cl. 36-11.500.

Martin, Henry, to Ciba-Geigy Corporation. Thienylglyoxylonitrile oximino phenylcarbamates for the protection of crops against injury by herbicides. 4,453,969, Cl. 71-90.000.

Martin, Henry, to Ciba-Geigy Corporation. Phenyl- and naphthylglyoxylonitrile oximino carbamates for the protection of crops against injury by herbicides. 4,453,974, Cl. 71-105.000.

Martin, Merrill D. Method of applying lubricant coating to bullets. 4,454,175, Cl. 427-242.000.

Martinet, Jacques R.: *See*—
Allen, Jim E.; and Martinet, Jacques R., 4,453,352, Cl. 52-98.000.

Martinsons, Robert; and Deutsch, Robert W., to Motorola, Inc. Engine speed adaptive air bypass valve (dashpot) control. 4,453,514, Cl. 123-327.000.

Martus, Charles R., to Allied Corporation. Temperature sensing circuit breaker or switch. 4,454,491, Cl. 335-208.000.

Martyniuk, Andrew. Trot-line reel. 4,453,843, Cl. 43-57.300.

Maruchi, Yoshiki: *See*—
Otsuki, Hiromi; Maruchi, Yoshiki; Kawai, Yukio; and Ogawa, Toshihisa, 4,453,700, Cl. 251-129.000.

Maruyama, Seiichiro: *See*—
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Shigemoto, Shigeru, 4,454,302, Cl. 525-167.000.

Maruyama, Takashi: *See*—
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Maruyama, Tsutomu: *See*—
Harada, Yuho; Maruyama, Tsutomu; Kumakura, Yoshiyuki; and Kuwayama, Shigeo, 4,453,962, Cl. 65-3.150.

Marveggio, Secondo, to Trimos S.A. Mechanism for measuring distances especially thread diameters. 4,453,316, Cl. 33-199.00R.

Maryanoff, Bruce E.; and Molinari, Albert J., to McNeilab, Inc. Pyrimido[6,1-a]isoquinoline-4-one derivatives. 4,454,319, Cl. 544-252.000.

Maryland Cup Corporation: *See*—
Cress, Allan K.; and Busse, Charles E., 4,453,998, Cl. 156-350.000.

Masco Corporation: *See—*
MacDonald, Robert D., 4,453,567, Cl. 137-614.110.
Masilamani, Divakaran; and Murthy, Andiappan K. S., to Allied Corporation. Producing methyl ethers of branched monoolefins. 4,454,356, Cl. 568-697.000.
Maslov, Gennady N.: *See—*
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Masson, Jean-Paul: *See—*
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Mast, Burton T.: *See—*
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Masui, Mikio: *See—*
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Mateika, Dieter; and Laurien, Rolf, to U.S. Philips Corporation. Magnetic device having a monocrystalline garnet substrate bearing a magnetic layer. 4,454,206, Cl. 428-692.000.
Mathewson, Thaine: *See—*
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Matier, William L., to American Hospital Supply Corporation. Method for treating glaucoma by the topical administration of selectively metabolized beta-blocking agents. 4,454,154, Cl. 424-309.000.
Matluck, Meyer: *See—*
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Matsubara, Kiyoshi: *See—*
Kato, Kazuo; Miyakawa, Nobuaki; Aihara, Makoto; and Matsubara, Kiyoshi, 4,454,500, Cl. 340-347.0AD.
Matsubara, Koichi: *See—*
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Matsuda, Akira: *See—*
Shimizu, Shizuo; Abe, Shunji; and Matsuda, Akira, 4,454,092, Cl. 264-349.000.
Matsuda, Susumu: *See—*
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Matsui, Fujio: *See—*
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Matsui, Kiyohide: *See—*
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Parkell, Edward, 4,453,964, Cl. 65-261.000.
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, to Empi, Inc. Method of improving sensory tolerance with modulated nerve stimulator. 4,453,548, Cl. 128-421.000.
Maus, Julius, to Gretsch-Unitas GmbH Baubeschlagfabrik. Window and door mounting. 4,453,345, Cl. 49-193.000.
Maxwell Laboratories, Inc.: *See—*
Lagus, Peter L.; and Peterson, Edward W., 4,453,595, Cl. 166-250.000.
May, Georg. Device for regulating the temperature of materials. 4,453,385, Cl. 62-3.000.
May, George A., to May, George A. High resolution light pen for use with graphic displays. 4,454,417, Cl. 250-216.000.
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McCoy, Archibald H. R. Frame and cover members for constructing apertures in road surfaces. 4,454,039, Cl. 210-164.000.
McDaniel, Max P., to Phillips Petroleum Company. Polymerization using partially hydrolyzed silicate treatment of catalyst support. 4,454,293, Cl. 526-106.000.
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Lowe, James R., 4,454,496, Cl. 340-980.000.
McDonald, Howard L.; and Petri, Richard P., to Industrial Air Products, Inc. Extrusion cooling apparatus. 4,453,321, Cl. 34-182.000.
McDonald, William D. Mobile wooden truss fabricating apparatus. 4,453,705, Cl. 269-37.000.
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McGee, Patrick J. Device for the in situ removal of dents in components of vehicles. 4,453,391, Cl. 72-54.000.
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McGhie, James R.; and Fishgal, Semyon I. Steerable wheel suspension assembly. 4,453,734, Cl. 280-662.000.
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McInroy, John W.; Waldo, Paul D.; Elliott, Jo A.; Adam, Thomas L.; and White, Freddie R., to International Business Machines Corporation. Report preparation. 4,454,576, Cl. 364-200.000.
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McKean, James H. Phonetic/semantic systems, devices and methods of constructing and utilizing same. 4,453,719, Cl. 273-265.000.
McKinney, Osborne K.; and Flores, David P., to Dow Chemical Company, The. Slip and block additives for olefin polymers. 4,454,272, Cl. 524-241.000.
McKinnon, Robert M. Cut off nipples. 4,453,749, Cl. 285-4.000.
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McMurray, Bunny D. Mail box brace. 4,453,685, Cl. 248-146.000.
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Imbert, Jean-Maurice, 4,453,902, Cl. 425-47.000.
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Bobick, Thomas W.; Clark, Frederic L.; Jongerling, Henry W.; Kockler, Barry C.; and Mitrovich, Svetislav, 4,453,841, Cl. 400-126.000.
Oliff, James R., 4,453,664, Cl. 229-40.000.
Powell, Calvin J.; and Rounsley, Robert R., 4,453,404, Cl. 73-159.000.
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Halpern, Benjamin R., 4,453,715, Cl. 273-153.00S.
Meindl, Hubert: *See—*
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Melvin, Lawrence S., Jr.; and Johnson, Michael R., to Pfizer Inc. Substituted dibenzo[b,d]pyran analgesics. 4,454,144, Cl. 424-263.000.
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Menault, Jacques: *See—*
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Mencke, Burkhard; Ehlers, Eberhard; Blumbach, Jurgen; Durckheimer, Walter; and Seeger, Karl, to Hoechst Aktiengesellschaft. Cephem derivatives. 4,454,129, Cl. 424-246.000.
Mengel, Rudolf: *See—*
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Menon, Govind K.; and Sanders, Winfred J., to SmithKline Beckman Corporation. Feed compositions containing copper salts of 2-hydroxypyridine-N-oxides. 4,454,137, Cl. 424-245.000.
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Rolleston, Richard E., 4,454,107, Cl. 424-1.100.
Veeder, George T.; and Peik, Jerry A., 4,454,316, Cl. 536-123.000.
Woltersdorf, Otto, Jr.; Schwam, Harvey; Michelson, Stuart R.; and Sondey, John M., 4,454,148, Cl. 424-270.000.
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Merkel, Stephen L.; and Price, Richard P., to Nordson Corporation. Controlled current solenoid driver circuit. 4,453,652, Cl. 222-504.000.
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Merrell Toraude et Compagnie: *See*—
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Casara, Patrick, 4,454,156, Cl. 424-319.000.
Merten, Gerhard; Steinkuhl, Bernd; and Breuer, Oswald, to Gewerkschaft Eisenhutte Westfalia. Mineral winning plough with sword plate formed of plural parts. 4,453,771, Cl. 299-34.000.
Mesa-Tejada, Ricardo: *See*—
Ali, Majid; Nalebuff, Donald; Fayemi, Alfred; Ramanarayanan, Madhava P.; and Mesa-Tejada, Ricardo, 4,454,226, Cl. 435-7.000.
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Meyer, Frank, to Bergwerksverband GmbH. Process of sealing and strengthening water-bearing geological formations by means of polyurethane-resin-forming compositions. 4,454,252, Cl. 521-110.000.
Meyer, Kurt: *See*—
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Meyers, Joseph A.: *See*—
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Meynier, Guy, to Societe Anonyme DBA. Method and apparatus for setting the idle stroke of a master-cylinder/servo assembly, and brake control unit adjusted by implementing this method. 4,453,380, Cl. 60-534.000.
Meynier, Guy, to Societe Anonyme DBA. Servomotor for braking assistance with reduced stroke of actuation. 4,453,452, Cl. 91-376.00R.
Michelson, Stuart R.: *See*—
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Miesak, Edward J. Method and apparatus for tuning percussion instruments. 4,453,448, Cl. 84-454.000.
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Miller, Daniel G., to United States of America, Air Force. Universal control grid modulator. 4,454,430, Cl. 307-265.000.
Miller, Douglas N. Steel tape reload dispenser. 4,453,680, Cl. 242-85.000.
Miller, Gary I., to United States of America, Air Force. Programmable arithmetic logic unit. 4,454,589, Cl. 364-716.000.
Miller, James A. Oar rest for row boats. 4,453,490, Cl. 114-364.000.
Miller, Michael J.: *See*—
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Miller, Ronald R.; Barber, William R., Jr.; Hampel, David A.; and Ault, James E., to ESCO Corporation. Method of drill bit manufacture and product. 4,454,205, Cl. 428-556.000.
Millett, Michael. Secondary radar system. 4,454,512, Cl. 343-12.00R.
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Abe, Haruhiko; Harada, Hiroshi; Kinoshita, Shigeji; Hirata, Yoshihiro; Denda, Masahiko; and Akasaka, Yoichi, 4,454,166, Cl. 427-85.000.
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Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,454,395, Cl. 200-147.00R.
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Miura, Akira: *See*—
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Miura Co., Ltd.: *See*—
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Miyake, Hiroyuki; Sagara, Seiji; Kagiura, Kazuo; Sasaki, Nobukazu; and Yonemori, Takaji, to Canon Kabushiki Kaisha. Variable magnification copying apparatus. 4,453,824, Cl. 355-57.000.
Miyake, Ichio; and Misono, Kazunori, to Mizuno Corporation. Baseball glove. 4,453,272, Cl. 2-19.000.
Miyamoto, Masakatsu; Suzuki, Yoshiharu; Ojima, Masayoshi; Iizuka, Yutaka; Orita, Ryuzo; and Matsuo, Tadashi, to Nippon Kayaku Kabushiki Kaisha. Process for dyeing cellulose fibers of its union fibers with reactive triazinyl dye quaternized with nicotinic acid. 4,453,945, Cl. 8-543.000.
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Miyashita, Takumi, to Fujitsu Limited. Circuit for generating a substrate bias voltage. 4,454,571, Cl. 363-60.000.
Miyazawa, Takashi, to Kirin Beer Kabushiki Kaisha. Defect detecting method and apparatus. 4,454,542, Cl. 358-106.000.
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Venkatesan, Valadi N.; and Stowe, Lawrence R., 4,454,018, Cl. 208-11.00R.
Moffat, Arlo J., to Phillips Petroleum Company. Sorbent bases treated with organic halides and their use to remove acidic substances from gas mixtures. 4,454,099, Cl. 423-210.000.

Mohri, Kaneo: *See—*
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Mondou, Eugene R.; and Schneider, Frederick W., to International Business Machines Corporation. Method for removing electrically conductive paste from a screening mask. 4,453,984, Cl. 134-22.190.
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Moniz, James R.: *See—*
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Monroe, Kevin T., to AMP Incorporated. Coaxial connector plug. 4,453,796, Cl. 339-177.00R.
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Pookote, Suseelan R.; and Bagley, Melvin R., 4,454,361, Cl. 568-937.000.
Ting, Chihyuan C.; Tomkins, David F.; and Rueppel, Melvin L., 4,454,043, Cl. 210-659.000.
Moore, Arnold R., to RCA Corporation. Method and apparatus for determining minority carrier diffusion length in semiconductors. 4,454,472, Cl. 324-158.00R.
Moore, John V. Enclosed structure. 4,453,351, Cl. 52-82.000.
Moore, Thomas S.: *See—*
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Morello, Giovanni, to WABCO Westinghouse Compagnia Italiana Segnali S.p.A. Multiple colored searchlight signal unit. 4,454,570, Cl. 362-231.000.
Moreno, Francisco M., to Paco Moreno, S.A. Device for cleaning lamps. 4,453,557, Cl. 134-172.000.
Morgan, Barry A., to Sterling Drug Inc. Analgesic dipeptide amides and method of use and compositions thereof. 4,454,120, Cl. 424-177.000.
Mori, Kenji, to Sumitomo Chemical Company, Limited; and Earth Chemical Company, Limited. Homobrassinolide compounds which are steroids having plant growth promoting activity. 4,453,967, Cl. 71-88.000.
Mori, Kozo: *See—*
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Mori, Sumio, to Fuji Photo Film Co., Ltd. Band compression device for shaded image. 4,454,546, Cl. 358-260.000.
Moriguchi, Haruhiko; Ohmori, Takashi; and Inui, Toshiharu, to Fuji Xerox Co., Ltd. Heat-sensitive recording device. 4,454,516, Cl. 346-76.0PH.
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Morita, Tamao. Engageable article using permanent magnet. 4,453,294, Cl. 24-303.000.
Moritz, Peter G.; and Harders, Simon L., to Wormald International Limited. Combination lock monitoring system. 4,453,390, Cl. 70-434.000.
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Morotti, Mauro: *See—*
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Morris, James B. N. Aqueous drill cutting treatment apparatus and method. 4,453,319, Cl. 34-1.000.
Morrisey, Edward J., to United States of America, Air Force. Method of making compartmented, filament wound, one-piece aircraft fuel tanks. 4,453,995, Cl. 156-172.000.
Morse, John F. Automobile brake pedal control. 4,454,497, Cl. 340-52.00R.
Morse, Royal R., III: *See—*
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Mort, Charles B.; and DeSalve, Dennis W., to United Aircraft Products, Inc. Sealing mechanical tube joints. 4,453,301, Cl. 29-157.30C.
Morton, William D., Jr., to Precision Monolithics, Inc. Apparatus for tracking integrated circuit devices. 4,454,413, Cl. 235-375.000.
Mosiman, Charles A.; and Deming, William A. Gauge for checking angular disposition of vehicular spring struts. 4,453,315, Cl. 33-181.0AT.
Mossner, Eugen K.: *See—*
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Sands, Robert E., 4,453,561, Cl. 137-327.000.
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Mullay, John J., to Atlas Powder Company. Solid sensitizers for water-in-oil emulsion explosives. 4,453,989, Cl. 149-21.000.
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Sautter, Wolfgang; and Muller, Rudolf, 4,453,733, Cl. 280-661.000.
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Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,453,955, Cl. 55-387.000.
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Hamuro, Mitsuro; and Kaneko, Fumihiko, 4,453,633, Cl. 206-330.000.
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Murphy, John R.; Babiec, John S., Jr.; and Meyers, Joseph A., to Atlantic Richfield Co. Polyurethane foam game ball, composition and process. 4,454,253, Cl. 521-112.000.
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Nassir, Nicholas. Method and system for recovering energy from hot pressurized waste. 4,453,323, Cl. 60-39.182.
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Richman, Edward; and Thorn, Mark A., 4,454,055, Cl. 252-194.000.
Naumann, Ted F., Jr.; and Carnes, Ronald C., to General Electric Company. Ultrasonic sector scanner utilizing rotating transducer. 4,453,409, Cl. 73-639.000.
Nayak, Ashok B.; and Laub, Leonard, to Storage Technology Corporation. Tracking mirror assembly and control system for an optical data storage disc. 4,454,415, Cl. 250-201.000.
Naylor, Carter G., to Texaco Inc. Salts of dicyclopentadiene sulfonate and method of preparing. 4,454,074, Cl. 260-503.000.
NCR Corporation: *See*—
Bangs, Richard G., 4,454,518, Cl. 346-140.00R.
Hall, Stacy W., 4,454,449, Cl. 313-584.000.
Spence, Wendell, 4,454,524, Cl. 357-23.000.
Neal, Brian P., to Bendix Limited. Valve assemblies. 4,453,780, Cl. 303-69.000.
Neat, Benjamin C. Plastic container having threaded closure. 4,453,647, Cl. 220-288.000.
Neese, Wayne E., to GTE Automatic Electric Inc. Electrical switch for thick/thin film circuits. 4,454,396, Cl. 200-292.000.
Neff, James A., to MAC Valves, Inc. Four-way valve with cover mounted pressure regulating and flow control valve. 4,453,565, Cl. 137-596.000.
Neff, James A., to MAC Valves, Inc. Remote air operator for an air valve, with manual override and indicator. 4,453,697, Cl. 251-14.000.
Neha International: *See*—
Spann, Robert J., 4,454,462, Cl. 318-729.000.
Nelgo Manufacturing Corporation: *See*—
Gongwer, Nelson; and Gongwer, Dean, 4,453,457, Cl. 99-345.000.
Nelmor Company, Inc.: *See*—
Young, James L., 4,454,030, Cl. 209-669.000.
Nelson, Norman A. Lockdown mechanism for wellhead connector. 4,453,745, Cl. 285-18.000.
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Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
Nestich, R. Frank; and Preston, Burton L., to Interpace Corporation. Hydraulically balanced valve mechanism. 4,453,560, Cl. 137-312.000.
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Neuroth, David H., to Harvey Hubbell Incorporated. Oil well cable. 4,454,377, Cl. 174-103.000.
Neuroth, David H., to Harvey Hubbell Incorporated. Arcuate armored cable. 4,454,378, Cl. 174-103.000.
New Process Industries, Inc.: *See*—
Benson, Glendon M., 4,454,426, Cl. 290-1.00R.
Newton, Ronald O., to General Signal Corporation. Relay valve assembly. 4,453,777, Cl. 303-2.000.
Newton, W. Howard, to Chester Labs, Inc. Disposable container-applicator with leak-proof cover. 4,453,935, Cl. 604-197.000.
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Panek, George J.; and Nieman, Gerald R., 4,453,793, Cl. 339-75.00M.
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Harrild, Niels Aage L., 4,453,646, Cl. 220-258.000.
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Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.
Nippon Air Brake Co., Ltd.: *See*—
Arikawa, Tetsuro; and Samatsu, Yasuo, 4,453,782, Cl. 303-116.000.
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Koike, Tatsuhiro, 4,453,439, Cl. 84-1.010.
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Nippon Kayaku Kabushiki Kaisha: *See*—
Miyamoto, Masakatsu; Suzuki, Yoshiharu; Ojima, Masayoshi; Iizuka, Yutaka; Orita, Ryuzo; and Matsuo, Tadashi, 4,453,945, Cl. 8-543.000.
Nippon Soken, Inc.: *See*—
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitoshi, 4,453,397, Cl. 73-23.000.
Nippondenso Co., Ltd.: *See*—
Ito, Teruyoshi; and Abe, Shigeya, 4,453,526, Cl. 123-617.000.
Otsuki, Hiromi; Maruchi, Yoshiki; Kawai, Yukio; and Ogawa, Toshihisa, 4,453,700, Cl. 251-129.000.
Saji, Hideo; Yamauchi, Yasutaka; and Kobushi, Mamoru, 4,453,515, Cl. 123-339.000.
Takasu, Yasuhito; Inoue, Shingo; and Iwata, Toshiharu, 4,453,521, Cl. 123-419.000.
Nirdosh, Inderjit; Baird, Malcolm H.; Banerjee, Sanjoy; and Muthuswami, Sirugamani V. Process of extracting both uranium and radium from uranium-containing ores. 4,454,097, Cl. 423-8.000.
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Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Tamamushi, Takashige, to Semiconductor Research Foundation. Semiconductor image sensor and the method of operating the same. 4,454,526, Cl. 357-30.000.

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Hayashi, Yoshimasa, 4,453,509, Cl. 123-195.00R.
Hira, Kazumi, 4,453,760, Cl. 296-37.130.
Kawamura, Yoshihisa; and Dozono, Kichihiko, 4,453,379, Cl. 60-278.000.

Nisshin Oil Mills, Ltd., The: *See*—
Takagi, Yoshiaki; and Kai, Yoshinori, 4,454,329, Cl. 549-413.000.

Niswander, Ron H.: *See*—
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Nitto Electric Industrial Co., Ltd.: *See*—
Hori, Yutaka; Sunakawa, Makoto; and Satsuma, Michio, 4,453,997, Cl. 156-305.000.

NL Industries, Inc.: *See*—
Short, Lot W., Jr., 4,453,605, Cl. 175-410.000.

Noba, Masahiko: *See*—
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Nodai, Etsuo; and Watanabe, Takeshi, to GAC International, Inc. Face bow. 4,453,917, Cl. 433-5.000.

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Nylund, Olov; and Ode, Bengt, to AB Asea-Atom. Fuel assembly with a water distribution channel. 4,454,093, Cl. 376-282.000.

Nystrom, Michael C., to Control Data Corporation. Bus contention circuit. 4,454,581, Cl. 364-200.000.

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Lund, John A.; Richardson, David L.; and Stubbs, Graham S., 4,454,543, Cl. 358-118.000.

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O'Brien, James P., to Sundstrand Data Control, Inc. Automatic acceptance test system for aircraft computers. 4,454,588, Cl. 364-551.000.

O'Brien, Michael K.: *See*—
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Ohriner, Evan K.: *See*—
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Kuze, Katsuaki; Hashimoto, Hiroshi; Ohta, Takeshi; Akaishi, Tsukasa; Takeuchi, Kunio; and Kamatani, Hirovoshi, 4,454,312, Cl. 528-275.000.

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Oka, Hiroshi; Yoshida, Yoshinori; and Naitou, Yuuzi, to Japan Synthetic Rubber Co., Ltd. Polyamide acid, process for producing same and polyimide obtained therefrom. 4,454,310, Cl. 528-188.000.

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Okamoto, Kouichi; Uchida, Mitsuhiro; and Nomura, Tatsuei, to Mitsubishi Denki Kabushiki Kaisha. Air gap winding rotating electric machine. 4,454,439, Cl. 310-179.000.

Okayama, Minoru: *See*—
Noyori, Ryoji; Suzuki, Sakaru; Okayama, Minoru; Sakurai, Katukiyo; Kamohara, Shigeyoshi; and Ueno, Yoshio, 4,454,123, Cl. 424-180.000.

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Fujii, Setsuro; Okutome, Toshiyuki; Nakayama, Toyoo; Yaegashi, Takashi; and Kurumi, Masateru, 4,454,338, Cl. 560-34.000.

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Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, 4,454,213, Cl. 430-76.000.

Oleinik, Jury V.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alex-

andr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
Oliff, James R., to Mead Corporation, The. Dual purpose promotional means. 4,453,664, Cl. 229-40.000.
Oliver, John E.: *See*—
Singer, Arnold M.; and Oliver, John E., 4,453,598, Cl. 166-312.000.
Olsen, Erik: *See*—
Clausen-Kaas, Niels; Jansen, Gert; and Olsen, Erik, 4,454,318, Cl. 544-241.000.
Olson, Morris R., to Cargill Incorporated. Reduction of volatile organic emissions from polyester compositions. 4,454,273, Cl. 524-317.000.
Olson, Robert W. Fishing lure. 4,453,333, Cl. 43-42.500.
Olson, Billy E., to AMP Incorporated. Low profile DIP switch. 4,454,391, Cl. 200-16.00D.
Olszewski, Anthony R.: *See*—
Hoda, Syed N.; and Olszewski, Anthony R., 4,454,237, Cl. 501-2.000.
Olympian Stone Company, Inc.: *See*—
Robinson, Ralph C., 4,453,359, Cl. 52-389.000.
Olympus Optical Company, Ltd.: *See*—
Hayashi, Asao; Oinoue, Kenichi; Aoki, Masahiro; Nakamura, Junichi; and Ida, Masatoshi, 4,453,818, Cl. 354-406.000.
Yamasaki, Masafumi, 4,453,811, Cl. 354-412.000.
OMAC, Inc.: *See*—
Hanks, John, 4,453,684, Cl. 244-129.500.
Ong, Edith C.: *See*—
Chen, Cheng-Hsuan; Ong, Edith C.; Phillips, James C.; and Tai, King L., 4,454,221, Cl. 430-316.000.
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Ono, Motoyuki: *See*—
Takaoka, Michio; Ono, Motoyuki; and Kaji, Isao, 4,454,375, Cl. 174-73.00R.
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Okimura, Hirotake; and Tanaka, Hideyuki, 4,453,978, Cl. 106-88.000.
Onoda, Michitoshi: *See*—
Ohta, Minoru; Hattori, Yutaka; Kawakami, Tomio; and Onoda, Michitoshi, 4,453,397, Cl. 73-23.000.
Onuma, Akira: *See*—
Kajiwara, Ryoichi; Kokura, Satoshi; Kozono, Yuzo; and Onuma, Akira, 4,454,408, Cl. 219-124.340.
Oosaka, Shigenori; and Tozaki, Katutosi, to Fuji Photo Film Co., Ltd. Ink jet head with slit nozzles. 4,454,519, Cl. 346-140.00R.
Oppenheimer, Jess. Transverse force indicating device for swing teaching. 4,453,716, Cl. 273-186.00A.
Opperman, Paul; and Liette, Roger H. Fishing lure. 4,453,334, Cl. 43-42.130.
Origuchi, Shingo, to Idemitsu Kosan Company Limited. Construction for containing plastic film. 4,453,649, Cl. 221-26.000.
Orita, Ryuzo: *See*—
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Orthman, Henry K.; and Stombaugh, Jay, to Orthman Manufacturing, Inc. 180 Degree folding tool bar. 4,453,601, Cl. 172-311.000.
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Orthman, Henry K.; and Stombaugh, Jay, 4,453,601, Cl. 172-311.000.
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury L.; Dashevsky, Grigory I.; and Iovlev, Vladimir A. Device for fusion of electrodeposited coating of printed-circuit boards. 4,453,916, Cl. 432-197.000.
Osmialowski, Victor R., to Union Carbide Corporation. Pressure contact tab/cover construction for electrochemical cells. 4,454,208, Cl. 429-163.000.
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, to Exxon Research and Engineering Co. Trihydrocarbyl silyl substituted alkyl diaryl phosphine transition metal complexes and their use as homogeneous hydroformylation-aldolization catalysts. 4,454,353, Cl. 568-454.000.
Ota, Masao: *See*—
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Ota, Yozo: *See*—
Wada, Satomi; Senda, Masanori; Horii, Takashi; and Ota, Yozo, 4,454,076, Cl. 261-44.00C.
Otey, Felix H.; and Westhoff, Richard P., to United States of America, Agriculture. Starch-based semipermeable films. 4,454,268, Cl. 524-47.000.
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Canalizo, Carlos R., 4,453,568, Cl. 137-624.140.
Fredd, John V., 4,453,599, Cl. 166-374.000.
O'Toole, Charles J., Jr.: *See*—
Braschler, Boyce D.; Diddens, Paul A.; Erickson, Roger D.; and O'Toole, Charles J., Jr., 4,454,520, Cl. 346-153.100.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,454,130, Cl. 424-248.400.
Otsuki, Hiromi; Maruchi, Yoshiki; Kawai, Yukio; and Ogawa, Toshihisa, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Fluid control valve assembly. 4,453,700, Cl. 251-129.000.
Ott, Karl-Heinz: *See*—
Lindner, Christian; Liebig, Lothar; and Ott, Karl-Heinz, 4,454,305, Cl. 525-310.000.
Otto, Rolf. Dumping device for refuse containers having a device for opening the cover. 4,453,877, Cl. 414-411.000.
Outboard Marine Corporation: *See*—
Poehlman, Arthur G., 4,453,523, Cl. 123-527.000.
Owens, Carl H. Apparatus for reusing high pressure hose fittings. 4,453,302, Cl. 29-237.000.
Oximetrix, Inc.: *See*—
Pastrone, Giovanni, 4,453,931, Cl. 604-153.000.
Pastrone, Giovanni, 4,453,932, Cl. 604-153.000.
OY Partek AB: *See*—
Paukku, Teuvo, 4,453,878, Cl. 414-491.000.
Ozawa, Tetsuo: *See*—
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Pabis, William J.: *See*—
Cleveland, William K. S.; and Pabis, William J., 4,454,379, Cl. 174-107.000.
Paccar of Canada Ltd.: *See*—
Sell, Leslie J., 4,453,430, Cl. 74-770.000.
Pace, Salvatore J., to Du Pont de Nemours, E. I., and Company. Ion-selective layered sensor and methods of making and using the same. 4,454,007, Cl. 204-1.00T.
Paco Moreno, S.A.: *See*—
Moreno, Francisco M., 4,453,557, Cl. 134-172.000.
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Clemmow, Raymond J., 4,453,775, Cl. 299-81.000.
Page, Howard L.; and Wingert, James A., to International Business Machines Corporation. Program call method and call instruction execution apparatus. 4,454,580, Cl. 364-200.000.
Pahade, Ravindra F.; Ziemer, John H.; and Cheung, Harry, to Union Carbide Corporation. Double column multiple condenser-reboiler high pressure nitrogen process. 4,453,957, Cl. 62-25.000.
Palfreyman, Jack: *See*—
Angus, James P.; and Palfreyman, Jack, 4,453,721, Cl. 277-3.000.
Palitex Project-Company GmbH: *See*—
Inger, Siegfried; and Fink, Heinz, 4,453,377, Cl. 57-279.000.
Palkovics, William J., to Topline Products, Inc. Rain shield for insulated pipe installations. 4,453,562, Cl. 137-382.000.
Palmer, James K. System and method for reducing scale formation in boilers. 4,453,499, Cl. 122-379.000.
Panek, George J.; and Nieman, Gerald R., to International Telephone and Telegraph Corporation. Locking mechanism for rectangular electrical connector. 4,453,793, Cl. 339-75.00M.
Pantuso, Joseph: *See*—
Kuan, Tiong H.; Pantuso, Joseph; and Sommer, John G., 4,453,992, Cl. 156-115.000.
Paper Converting Machine Company: *See*—
Bradley, John J., 4,453,706, Cl. 270-54.000.
Pappas, Michael J.: *See*—
Witte, Paul A.; and Pappas, Michael J., 4,453,650, Cl. 222-43.000.
Paradis, Roland C.: *See*—
Leka, George T.; and Paradis, Roland C., 4,453,898, Cl. 417-521.000.
Parham, Marc E.; Spearman, Stephen A.; and Cookson, Gleason O., to Ciba-Geigy Corporation. Process for purification and isolation of diaminophenylindane. 4,454,347, Cl. 564-428.000.
Parkell, Edward, to Maul Technology Corporation. Air distributing mechanism for glass forming apparatus. 4,453,964, Cl. 65-261.000.
Parker, Donald L.: *See*—
Warwick, Edward H.; and Parker, Donald L., 4,453,621, Cl. 188-250.00G.
Parkinson, Ward: *See*—
Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, 4,454,529, Cl. 357-75.000.
Parks, Ralph P., Jr.: *See*—
Roche, William J.; and Parks, Ralph P., Jr., 4,454,447, Cl. 313-492.000.
Pask, George, to Rolls-Royce Limited. Fuel burners and combustion equipment for use in gas turbine engines. 4,453,384, Cl. 60-737.000.
Pastrone, Giovanni, to Oximetrix, Inc. Intravenous metering device. 4,453,931, Cl. 604-153.000.
Pastrone, Giovanni, to Oximetrix, Inc. Intravenous metering device. 4,453,932, Cl. 604-153.000.
Patalong, Hubert, to Siemens Aktiengesellschaft. Thyristor having controllable emitter short circuits and a method for its operation. 4,454,527, Cl. 357-38.000.
Patecell, Theodore C. Air retaining and bead-seat-lock device for pneumatic tire wheels. 4,453,582, Cl. 152-379.400.
Patel, Natu R. N-Isopropylcarbanilylmethyl dithiophosphates as pre-emergent herbicides. 4,453,965, Cl. 71-87.000.
Pathe, Micheal V.: *See*—
Schneiderhan, Edward M.; Pathe, Micheal V.; and Schaffert, Kurt R., 4,454,583, Cl. 364-449.000.
Patten, Wayne J. Wood splitting device. 4,453,580, Cl. 144-193.00A.
Patton, John T., Jr.: *See*—
Reichel, Curtis J.; Patton, John T., Jr.; and Narayan, Thirumurti, 4,454,254, Cl. 521-136.000.

Patton, Keith M.; and Senftle, Frank E., to United States of America, Interior. Solution mining of coal by electrolysis. 4,453,594, Cl. 166-248.000.

Patzschke, Hans-Peter; and Gobel, Armin, to Herberts Gesellschaft mit beschrankter Haftung. Heat curable aqueous lacquer coating composition, its use for electrical deposition, and a process of cathodic deposition onto an electrical conductive substrate. 4,454,264, Cl. 523-414.000.

Paukku, Teuvo, to OY Partek AB. Lock device for loading equipment. 4,453,878, Cl. 414-491.000.

Pauza, William V.: *See*—
Bright, Edward J.; and Pauza, William V., 4,453,792, Cl. 339-64.00R.

Pearce, Godfrey R.; and Evans, William J., to Emhart Industries, Inc. Electrical component having a resistance element. 4,454,561, Cl. 361-275.000.

Peik, Jerry A.: *See*—
Veeder, George T.; and Peik, Jerry A., 4,454,316, Cl. 536-123.000.

Pekov, Nikolai S.: *See*—
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury L.; Dashevsky, Grigory I.; and Iovlev, Vladimir A., 4,453,916, Cl. 432-197.000.

Pellicelli, Bruno, to Bayer Aktiengesellschaft. Dielectrically heatable polyolefin foams. 4,454,256, Cl. 521-138.000.

Pennington, Dale H., to International Business Machines Corporation. Slant track sector servo. 4,454,549, Cl. 360-77.000.

Pennwalt Corporation: *See*—
Bertell, Jerome W., 4,454,050, Cl. 252-42.000.
Burns, Charles F.; and Pilcicki, Edward J., 4,453,977, Cl. 75-255.000.
Gardner, David M.; and Clark, Roger T., 4,454,321, Cl. 546-184.000.

Penta, Vincent L.; Boba, Joseph; Conger, Robert P.; and Charlton, Ralph W., to Congoleum Corporation. High reflectivity in flooring and other products. 4,454,188, Cl. 428-172.000.

Penverne, Albert; and Gobeaux, Pierre W., to F.T.F. Independent wheel suspension device with built-in shock absorbers especially designed for trailers. 4,453,735, Cl. 280-690.000.

Penzhorn, Ralf-Dieter; and Schuster, Peter, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Method for immobilizing radioactive noble gases in zeolites. 4,454,062, Cl. 252-630.000.

Penzien, Klaus: *See*—
Naarmann, Herbert; Naegele, Dieter; and Penzien, Klaus, 4,454,178, Cl. 427-302.000.

Perkin-Elmer Corporation, The: *See*—
Leka, George T.; and Paradis, Roland C., 4,453,898, Cl. 417-521.000.

Perplies, Eberhard, to Hoechst Aktiengesellschaft. Process for purification of mixtures containing water, salts, glycolate ions and organic solvents. 4,454,045, Cl. 210-672.000.

Perrin, Gunter; and Bergmann, Horst, to Daimler-Benz Aktiengesellschaft. Internal combustion engine. 4,453,513, Cl. 123-279.000.

Perry, E. Robert: *See*—
Rabinowitz, Mario; Hingorani, Narain G.; and Perry, E. Robert, 4,454,016, Cl. 204-308.000.

Persyk, Dennis E., to Siemens Gammasonics, Inc. Radiation detector assembly for generating a two-dimensional image. 4,454,422, Cl. 250-363.00S.

Peter, Emmett B., III; and O'Brien, Michael K., to Burroughs Corporation. Photo-optical snap-on paper path sensor. 4,454,419, Cl. 250-239.000.

Peters, Rainer, to Siemens Aktiengesellschaft. Pulse Doppler radar with fixed target echo rejection circuit formed of recursion filters. 4,454,511, Cl. 343-7.700.

Peterson, Edward W.: *See*—
Lagus, Peter L.; and Peterson, Edward W., 4,453,595, Cl. 166-250.000.

Petri, Richard P.: *See*—
McDonald, Howard L.; and Petri, Richard P., 4,453,321, Cl. 34-182.000.

Petrolite Corporation: *See*—
Becker, Harold L.; and Buriks, Rudolf S., 4,454,047, Cl. 210-705.000.
Hauser, Rudolf H.; Savage, Allen L.; and Harrell, Jack B., Jr., 4,454,006, Cl. 204-1.00T.

Petsch, Johann; and Kohn, Eric F., to ASR Servotron AG. Current regulator circuit. 4,454,573, Cl. 363-98.000.

Pettersson, Hans-Erik: *See*—
Jonsson, Hans; Pettersson, Hans-Erik; and Andersson, Kennerth, 4,454,160, Cl. 426-34.000.

Pfefferkorn, Dietmar: *See*—
Reimer, Karl-Juergen; Pfefferkorn, Dietmar; Koester, Eberhard; Kreimes, Norbert; Andriessen, Wilhelmus; Wagner, Herbert; and Wagner, Werner, 4,453,683, Cl. 242-199.000.

Pfizer Inc.: *See*—
Brennan, Thomas M.; and Hendrick, Michael E., 4,454,328, Cl. 549-28.000.
Melvin, Lawrence S., Jr.; and Johnson, Michael R., 4,454,144, Cl. 424-263.000.
Nagel, Arthur A., 4,454,314, Cl. 536-7.100.
Rajeckas, Faustas J.; and Holland, Gerald F., 4,454,320, Cl. 544-300.000.

Phillips, James C.: *See*—
Chen, Cheng-Hsuan; Ong, Edith C.; Phillips, James C.; and Tai, King L., 4,454,221, Cl. 430-316.000.

Phillips Petroleum Company: *See*—
Banks, Robert L., 4,454,368, Cl. 585-646.000.
Hutson, Thomas, Jr.; and Hann, Paul D., 4,454,369, Cl. 585-719.000.
McDaniel, Max P., 4,454,293, Cl. 526-106.000.
Moffat, Arlo J., 4,454,099, Cl. 423-210.000.
Tolonen, William J., 4,453,535, Cl. 126-444.000.
Walker, Starnes E., 4,454,434, Cl. 307-523.000.

Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, to AVX Corporation. Integrated circuit device having internal dampening for a plurality of power supplies. 4,454,529, Cl. 357-75.000.

Phipps, Jack R.: *See*—
Vilardo, Louis V.; and Phipps, Jack R., 4,453,896, Cl. 417-462.000.

Physio Technology, Inc.: *See*—
Castel, John C.; and Kerwin, Richard G., 4,453,547, Cl. 128-421.000.

Piccagli, Ugo. Process of forming a continuous wall in the ground. 4,453,366, Cl. 52-742.000.

Pickens, Stanley R.: *See*—
Korach, Malcolm; and Pickens, Stanley R., 4,454,011, Cl. 204-59.00R.

Picker International Limited: *See*—
Young, Ian R., 4,454,474, Cl. 324-309.000.

Pierce, Robert C.: *See*—
Lai, Kuo-Yann; Pierce, Robert C.; Dupre, Jean; and Killam, H. Scott, 4,454,060, Cl. 252-547.000.

Pilat, John F.; Wells, Douglas M.; Hamilton, Eric; and Compton, J. Theodore, to Data General Corporation. System for performing call and return operations. 4,454,579, Cl. 364-200.000.

Pilcicki, Edward J.: *See*—
Burns, Charles F.; and Pilcicki, Edward J., 4,453,977, Cl. 75-255.000.

Pindar, John F.; Cohen, Jerome M.; and Bryant, Charles P., to Lubrizol Corporation, The. Nitrogenous dispersants, lubricants and concentrates containing said nitrogenous dispersants. 4,454,059, Cl. 252-51.50R.

Pine, Lloyd A.; and Cull, Neville L., to Exxon Research and Engineering Co. Phosphorus-containing catalyst. 4,454,241, Cl. 502-68.000.

Pioneer Electronic Corporation: *See*—
Toriumi, Hiroshi, 4,454,538, Cl. 358-86.000.

Pirgov, Yordan V.: *See*—
Andonov, Blagoy A.; and Pirgov, Yordan V., 4,453,678, Cl. 242-27.000.

Pirsch, Peter: *See*—
Netravali, Arun N.; and Pirsch, Peter, 4,454,506, Cl. 340-728.000.

Pirz, Frank C.; Rabiner, Lawrence R.; and Wilpon, Jay G., to AT&T Bell Laboratories. Method and apparatus for generating speech pattern templates. 4,454,586, Cl. 364-513.500.

Pitney Bowes Inc.: *See*—
Cage, Curtis, 4,454,595, Cl. 364-900.000.
Schubert, Keith E., 4,454,412, Cl. 235-101.000.

Pittaluga, Pietro, to T.P. System S.a.s. di Pittaluga Giuseppe & C. Additive for the water circulating in civil and industrial heating plants. 4,454,053, Cl. 252-71.000.

Plastics Engineering Company: *See*—
Barker, Henry P.; and Rummings, Lewis J., 4,454,089, Cl. 264-140.000.

Pliskanovsky, Stanislav T.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.

Ploger, Heinz, to Deutsche Babcock Bau GmbH. Combustion chamber construction. 4,453,475, Cl. 110-336.000.

Plotz, Eberhard. Dumbbell. 4,453,710, Cl. 272-122.000.

Pluequet, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Lubricating arrangement, especially for internal combustion engines. 4,453,511, Cl. 123-196.00S.

Pochiman, Arthur G., to Outboard Marine Corporation. Pressure balanced flow regulator for gaseous fuel engine. 4,453,523, Cl. 123-527.000.

Poggie, Joseph L. Anti-skid braking system. 4,453,781, Cl. 303-112.000.

Pohlmann, Juergen L. W., to United States of America, Army. Electrochemical method for producing a passivated junction in alloy semiconductors. 4,454,008, Cl. 204-15.000.

Point of Purchase Recycling, Inc.: *See*—
Vetter, Robert R.; and Aker, John L., 4,454,028, Cl. 209-548.000.

Poirier, Paul: *See*—
Dagenais, Roger J.; Dagenais, Jacques; and Poirier, Paul, 4,454,182, Cl. 428-74.000.

Pollack, Ronald M. Electric cord holder and cover. 4,454,374, Cl. 174-68.00C.

Pollock, Marlan R.; and Harp, Marlyn F., to Boeing Company, The. Open cell rigid thermoset foams and method. 4,454,248, Cl. 521-53.000.

Pomazkov, Vladimir V.: *See*—
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury L.; Dashevsky, Grigory I.; and Iovlev, Vladimir A., 4,453,916, Cl. 432-197.000.

Pome, Enzo: *See*—
Donazzan, Amedeo; and Pome, Enzo, 4,454,489, Cl. 333-227.000.

Pookote, Suseelan R.; and Bagley, Melvin R., to Monsanto Company. Crystal purification. 4,454,361, Cl. 568-937.000.

Popa, Adrian E.: *See*—
Bridges, William B.; and Popa, Adrian E., 4,453,802, Cl. 350-96.150.
Popescu, Florian R. Electromotive drive. 4,454,463, Cl. 322-4.000.
Popko, Valery V.: *See*—
Ioanesian, Jury R.; Popko, Valery V.; and Subkhangulov, Radik S., 4,453,604, Cl. 175-107.000.
Porter, Mark, to Yamaha Hatsudoki Kabushiki Kaisha. Rear suspension system for a motor-tricycle. 4,453,616, Cl. 180-210.000.
Posey, Mervin E. Novelty noisemaker and bank. 4,454,204, Cl. 428-542.400.
Pospisil, Peter: *See*—
Kolb, Bruno; Pospisil, Peter; and Auer, Maria, 4,453,954, Cl. 55-386.000.
Powell, Calvin J.; and Rounsley, Robert R., to Mead Corporation, The. Method and apparatus for determining statistical characteristics of sheet material. 4,453,404, Cl. 73-159.000.
Powell, David W.; and Hodges, James W., to United States Gypsum Company. Adjustable wall jamb for shower door. 4,453,346, Cl. 49-404.000.
Powis, George S., Jr. Safety extension lever for wall switch. 4,454,401, Cl. 200-331.000.
PPG Industries, Inc.: *See*—
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,454,203, Cl. 428-520.000.
Korach, Malcolm; and Pickens, Stanley R., 4,454,011, Cl. 204-59.00R.
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and Christenson, Roger M., 4,454,274, Cl. 524-157.000.
Precision Monolithics, Inc.: *See*—
Morton, William D., Jr., 4,454,413, Cl. 235-375.000.
Preston, Burton L.: *See*—
Nestich, R. Frank; and Preston, Burton L., 4,453,560, Cl. 137-312.000.
Price, Richard P.: *See*—
Merkel, Stephen L.; and Price, Richard P., 4,453,652, Cl. 222-504.000.
Procter & Gamble Company, The: *See*—
Colgrove, Donald A.; Schoggen, Howard L.; and Wray, Kenneth D., 4,454,359, Cl. 568-916.000.
MacGilp, Neil A.; McRitchie, Allan C.; Ingram, Barry T.; and Hampton, John, 4,454,049, Cl. 252-8.800.
Pryadko, Nikolai D.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
Pryanishnikov, Igor S.: *See*—
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.
Pryor, Clyde R.: *See*—
Hollingsead, Robert A.; and Pryor, Clyde R., 4,453,797, Cl. 339-132.00B.
Przybyla, Vincent A., Jr.: *See*—
Katz, Norman N. K.; and Przybyla, Vincent A., Jr., 4,453,546, Cl. 128-303.00R.
Pugh, Charles D.: *See*—
London, Joe F., Jr.; and Pugh, Charles D., 4,453,297, Cl. 28-163.000.
Pukaite, Clifford J., to North American Philips Corporation. Insert molding gate design for encapsulating electronic ceramics with thermoplastic materials. 4,453,903, Cl. 425-117.000.
Puntener, Alois, to Ciba-Geigy Corporation. Use of 1:2 cobalt complex dyes for dyeing leather or furs. 4,453,942, Cl. 8-437.000.
Purcocks, Dale M, to Duel International Stationary Co., Ltd. Support device for a binder system. 4,453,850, Cl. 402-4.000.
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Purdie, Clarence E., deceased (by Purdie, Irene D., executor), to Gopher Shooter's Supply Company, Incorporated. Beam scale with three poises. 4,453,610, Cl. 177-247.000.
Purdie, Irene D., executor: *See*—
Purdie, Clarence E., deceased, 4,453,610, Cl. 177-247.000.
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Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.
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Qonsar Corporation: *See*—
Zerfahs, Arthur S., 4,453,667, Cl. 232-7.000.
Quick, James E., to SISA Pharmaceutical Laboratories, Inc. Trans-B/C-7-(1-hydroxypentyl)-3-methoxy-17 methyl-6,7-didehydromorphinans, and methods of relieving pain with them. 4,454,141, Cl. 424-260.000.
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Hensley, Albert L., Jr.; and Quick, Leonard M., 4,454,026, Cl. 208-251.00H.
Quick, Willis K.: *See*—
Kelley, David E.; and Quick, Willis K., 4,453,879, Cl. 414-509.000.
Quirin, Michel: *See*—
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Hartmann, Clinton S., 4,454,488, Cl. 333-195.000.
Rabe, David L.; and Hudson, Colin M., to Deere & Company. Baler having preservative applicator with improved nozzle. 4,453,460, Cl. 100-73.000.
Rabiner, Lawrence R.: *See*—
Pirz, Frank C.; Rabiner, Lawrence R.; and Wilpon, Jay G., 4,454,586, Cl. 364-513.500.
Rabinowitz, Mario; Hingorani, Narain G.; and Perry, E. Robert, to Electric Power Research Institute, Inc. Removal of PCB from oil and other liquids. 4,454,016, Cl. 204-308.000.
Raduechel, Bernd: *See*—
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.
Raftopoulos, Demetrios D.; Baril, James D.; and Reimer, Glenn, to University of Toledo, The. Expandable intramedullary nail for the fixation of bone fractures. 4,453,539, Cl. 128-92.0BC.
Rahn, Armin, to C. Plath KG. Magnetic compass. 4,453,317, Cl. 33-364.000.
Rajeckas, Faustas J.; and Holland, Gerald F., to Pfizer Inc. Process for 5-substituted dialuric acids. 4,454,320, Cl. 544-300.000.
Ramanarayanan, Madhava P.: *See*—
Ali, Majid; Nalebuff, Donald; Fayemi, Alfred; Ramanarayanan, Madhava P.; and Mesa-Tejada, Ricardo, 4,454,226, Cl. 435-7.000.
Ramel, Francois: *See*—
Rousseau, Alain; and Ramel, Francois, 4,453,418, Cl. 73-861.580.
Ramloch, Herbert: *See*—
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Ramlow, Gerhard G.; Heyman, Duane A.; Grace, Oscar M.; Reichel, Curtis J.; and Hartman, Robert J., to BASF Wyandotte Corporation. Process for the preparation of white graft polymer dispersions and flame-retardant polyurethane foams. 4,454,255, Cl. 521-137.000.
Ranade, Gautam R.; and Salee, Gideon, to Occidental Chemical Corporation. Blends of vinyl halide-polyolefin graft polymers and SMA polymers. 4,454,300, Cl. 525-71.000.
Ranucci, Joseph A.: *See*—
Goldberg, Arthur H.; Matluck, Meyer; and Ranucci, Joseph A., 4,454,140, Cl. 424-260.000.
Rapp, Robert A.: *See*—
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Rapp, Werner; and Schmidt, Peter. Safety switch. 4,454,392, Cl. 200-61.670.
Rasmussen, George E.; and Donkle, Lucius B., Jr., to Interlake, Inc. Gravity-feed storage and delivery system. 4,453,641, Cl. 211-151.000.
Rathe, Richard D.: *See*—
Angus, William G.; Rathe, Richard D.; and Fox, Daniel J., 4,453,620, Cl. 188-112.00R.
Rau, Hans J.; and Just, Gerhard, to Bayer Aktiengesellschaft. Method of producing reinforced cast tires. 4,453,993, Cl. 156-124.000.
Ray, Siba P.; and Rapp, Robert A., to Aluminum Company of America. Composition suitable for use as inert electrode having good electrical conductivity and mechanical properties. 4,454,015, Cl. 204-293.000.
Raytheon Company: *See*—
Teich, Wesley W.; and Dudley, Kenneth W., 4,454,403, Cl. 219-10.55E.
RCA Corporation: *See*—
Abbott, Liston, 4,454,544, Cl. 358-120.000.
Duschl, Robert A., 4,454,541, Cl. 358-106.000.
Duschl, Robert A., 4,454,545, Cl. 358-213.000.
Lagoni, William A., 4,454,533, Cl. 358-31.000.
Moore, Arnold R., 4,454,472, Cl. 324-158.00R.
Reamot, Herve: *See*—
Colin, Gerard; and Reamot, Herve, 4,454,468, Cl. 323-365.000.
Reba, Imants, to Crown Zellerbach Corporation. System for serially conveying discrete flexible articles. 4,453,709, Cl. 271-195.000.
Redeker, Werner; and Uhlig, Uwe, to Hauni-Werke Korber & Co. KG. Apparatus for manipulating workpieces having plane parallel surfaces. 4,453,347, Cl. 51-108.00R.
Refined Industry Company Limited, The: *See*—
Lee, Cheuk-Ming, 4,453,712, Cl. 273-86.00B.
Regency Electronics, Inc.: *See*—
Buennagel, James A.; and Koch, Richard C., 4,454,509, Cl. 340-825.690.
Regie Nationale des Usines Renault: *See*—
Leddet, Philippe, 4,453,303, Cl. 29-407.000.
Rehberg, Heinrich: *See*—
Behringer, Hartmut; Karrenbauer, Kurt; and Rehberg, Heinrich, 4,454,067, Cl. 260-176.000.
Reichel, Curtis J.; Patton, John T., Jr.; and Narayan, Thirumurti, to BASF Wyandotte Corporation. Aminoplast resins, dispersions, and low flammability cellular and non-cellular polyurethane products prepared therefrom. 4,454,254, Cl. 521-136.000.
Reichel, Curtis J.: *See*—
Ramlow, Gerhard G.; Heyman, Duane A.; Grace, Oscar M.; Reichel, Curtis J.; and Hartman, Robert J., 4,454,255, Cl. 521-137.000.
Reimer, Glenn: *See*—
Raftopoulos, Demetrios D.; Baril, James D.; and Reimer, Glenn, 4,453,539, Cl. 128-92.0BC.

Reimer, Karl-Juergen; Pfefferkorn, Dietmar; Koester, Eberhard; Kreimes, Norbert; Andriessen, Wilhelmus; Wagner, Herbert; and Wagner, Werner, to BASF Aktiengesellschaft. Magnetic tape cassette arrangements. 4,453,683, Cl. 242-199.000.
Reinhardt, Bernd: *See—*
Kiefer, Hans; Rober, Hans-Gerd; and Reinhardt, Bernd, 4,454,587, Cl. 364-527.000.
Reischl, Artur; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of polyaddition products of isocyanates and denatured biomasses, their use as reactive fillers and as plant nutrients and a process for the production of sheets or shaped articles using the polyaddition products. 4,454,259, Cl. 523-129.000.
Reliance Electric Company: *See—*
Griffen, Neil C.; and Behrman, David M., 4,453,609, Cl. 177-211.000.
Relihan, Gary F., to General Electric Company. Reconfigurable x-ray AEC compensation. 4,454,606, Cl. 378-97.000.
Remer, Fred J. Grass edger and trimmer attachment. 4,453,372, Cl. 56-13.700.
Renault, Serge A. M.: *See—*
Goepfert, Serge; Marsaud, Serge G.; Renault, Serge A. M.; and Roger, Francoise M. M., 4,454,170, Cl. 427-160.000.
Rengo Co., Ltd.: *See—*
Tokuno, Masateru, 4,453,436, Cl. 83-76.000.
Resler, Edwin L., Jr., to Cornell Research Foundation, Inc. Combustion control by prestratification. 4,453,502, Cl. 123-1.00R.
Resnick, Martin L.: *See—*
Fahey, Robert J.; and Resnick, Martin L., 4,454,502, Cl. 340-507.000.
Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Ion exchange membranes. 4,454,247, Cl. 521-27.000.
Reuter, Wolfang: *See—*
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.
Rex, Donald K.: *See—*
Cornell, Robert W.; and Rex, Donald K., 4,453,660, Cl. 226-74.000.
Rhone-Poulenc Chimie de Base: *See—*
Jenck, Jean, 4,454,333, Cl. 560-1.000.
Rhone-Poulenc Industries: *See—*
Bachot, Jean; and Grosbois, Jean, 4,454,012, Cl. 204-72.000.
Rhone-Poulenc Specialities Chimiques: *See—*
Desbois, Michel, 4,454,350, Cl. 568-319.000.
Rhone-Poulenc-Textile: *See—*
Chion, Pierre; Menault, Jacques; Rodier, Henry; and Sacre, Jean-Paul, 4,454,091, Cl. 264-171.000.
Richards, Fred F., Sr. Throttle actuator. 4,453,519, Cl. 123-378.000.
Richards, Louis R., to Trihawk, Inc. Frame and body construction for automotive passenger vehicle. 4,453,763, Cl. 296-185.000.
Richardson, David L.: *See—*
Lund, John A.; Richardson, David L.; and Stubbs, Graham S., 4,454,543, Cl. 358-118.000.
Richardson, Robert B.: *See—*
Kildea, Robert J.; Alcorta, Jorge A.; and Richardson, Robert B., 4,453,784, Cl. 308-187.000.
Richman, Edward; and Thorn, Mark A., to National Starch and Chemical Corporation. Absorbent composition of matter, process for preparing same and article prepared therefrom. 4,454,055, Cl. 252-194.000.
Richter, David J.; and Miller, Clarence W., to Thermetic Glass, Inc. Corner construction for spacer used in multi-pane windows. 4,453,855, Cl. 403-295.000.
Ricketts, Thomas E.; and Burton, Robert S., to Occidental Oil Shale, Inc. In situ oil shale retort having horizontal voids with side pillars. 4,453,769, Cl. 299-2.000.
Ricoh Company, Ltd.: *See—*
Ariyama, Kenzo; Yamazaki, Hideo; and Hirota, Minoru, 4,454,210, Cl. 430-31.000.
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,454,212, Cl. 430-59.000.
Sawayama, Noboru; and Ikesue, Masumi, 4,453,493, Cl. 118-658.000.
Suguro, Yoshihiro; Nagamoto, Masanaka; Motosugi, Takanori; Hotta, Yoshihiko; and Watanabe, Toshiyuki, 4,454,521, Cl. 346-208.000.
Suzuki, Shigeru, 4,453,820, Cl. 355-3.0TR.
Riedel, Tilo H., to Sesamat Anstalt. Lever-operable fastener. 4,453,290, Cl. 24-70.0SK.
Riedle, Rudolf: *See—*
Zeller, Norbert; Riedle, Rudolf; Lindner, Tassilo; and Wagner, Wolfgang, 4,454,331, Cl. 556-448.000.
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Rieter Machine Works, Ltd.: *See—*
Nabulon, Werner; and Wirz, Armin, 4,453,298, Cl. 28-255.000.
Riley, Thomas C. Welding process and apparatus. 4,454,405, Cl. 219-61.000.
Rinn, Jurgen, to Heyligenstaedt & Co. Werkzeugmaschinenfabrik GmbH. Method and apparatus for precision turning. 4,453,313, Cl. 33-178.00D.
Ritter, Joachim A.: *See—*
Yip, Kwok L.; Hsing, To R.; Daniele, Joseph J.; and Ritter, Joachim A., 4,454,547, Cl. 358-293.000.
Ritter, Rolland R., to Control Data Corporation. Power supply having automatically varied primary turns. 4,454,466, Cl. 323-258.000.
Roanwell Corporation: *See—*
Danielson, Richard J.; and Marquart, John E., 4,454,387, Cl. 179-146.00R.
Robbins, Paul J. Can crusher. 4,453,459, Cl. 100-35.000.
Rober, Hans-Gerd: *See—*
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Robert Bosch GmbH: *See—*
Hafner, Udo, 4,453,671, Cl. 239-124.000.
Roberts, Donald R.: *See—*
Tortorello, Anthony J.; and Roberts, Donald R., 4,454,265, Cl. 523-420.000.
Roberts, Richard W.: *See—*
Klimek, Edmund J.; and Roberts, Richard W., 4,453,300, Cl. 29-156.40R.
Roberts, Robert L. Filter. 4,454,040, Cl. 210-283.000.
Roberts, Victor D., to General Electric Company. Inter-channel isolation scheme for compact, folded discharge lamps. 4,454,448, Cl. 313-493.000.
Roberts, William J.; and Ensminger, Robert J., to Arthur G. Russell Company, Incorporated, The. Vibratory feeding apparatus. 4,453,626, Cl. 198-391.000.
Robin Products Company: *See—*
Killop, Bradley V.; and Rogers, Robert R., 4,453,353, Cl. 52-147.000.
Robinson, Paul R.; and Moorehead, Eric L., to Union Oil Company of California. Catalyst and process for producing conjugated dienes. 4,454,245, Cl. 502-209.000.
Robinson, Ralph C., to Olympian Stone Company, Inc. Building wall panel. 4,453,359, Cl. 52-389.000.
Roccaforte, Harry I.; and Scott, Raymond G., to Champion International Corporation. Container for expandable food pouch. 4,453,665, Cl. 229-41.00B.
Roche, William J.; and Parks, Ralph P., Jr., to GTE Products Corporation. Dual filament fluorescent lamp with electron shielding means. 4,454,447, Cl. 313-492.000.
Rocher, Christian: *See—*
Dupont, Yves; and Rocher, Christian, 4,454,032, Cl. 210-96.100.
Rockwell International Corporation: *See—*
Fjeldsted, Thomas P., 4,453,800, Cl. 350-1.400.
Lewis, Harold F., 4,454,481, Cl. 330-307.000.
Roder, Anton, to Hoechst Aktiengesellschaft. Method for cultivating insect cells. 4,454,227, Cl. 435-240.000.
Rodgers, Alden E. Wall support device. 4,453,362, Cl. 52-481.000.
Rodier, Henry: *See—*
Chion, Pierre; Menault, Jacques; Rodier, Henry; and Sacre, Jean-Paul, 4,454,091, Cl. 264-171.000.
Roe, James E.: *See—*
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,454,163, Cl. 426-549.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,454,164, Cl. 426-549.000.
Roger, Francoise M. M.: *See—*
Goepfert, Serge; Marsaud, Serge G.; Renault, Serge A. M.; and Roger, Francoise M. M., 4,454,170, Cl. 427-160.000.
Rogers, Alvin J.: *See—*
Fishman, Herbert; and Rogers, Alvin J., 4,454,003, Cl. 156-640.000.
Rogers, Robert R.: *See—*
Killop, Bradley V.; and Rogers, Robert R., 4,453,353, Cl. 52-147.000.
Rohr, Jakob, to George Fischer Ltd. Cast vehicle wheel rim for tubeless tires. 4,453,776, Cl. 301-5.0VH.
Rolleston, Richard E., to Merck & Co., Inc. Tc99m-Phenida, radioscintigraphic agent for diagnosis of hepatoniliary disease. 4,454,107, Cl. 424-1.100.
Rolls-Royce Limited: *See—*
Angus, James P.; and Palfreyman, Jack, 4,453,721, Cl. 277-3.000.
Goulette, Michael J.; and Horrocks, Frederick J., 4,453,588, Cl. 164-352.000.
Pask, George, 4,453,384, Cl. 60-737.000.
Romberg, Helmut; and Koerner, Horst, to BASF Aktiengesellschaft. Nozzle with automatic switch-off. 4,453,577, Cl. 141-209.000.
Ronemus, James R.; Sentman, Lowell; and Wanesky, William R., to AT&T Technologies, Inc. Pull testing electrical device leads. 4,453,414, Cl. 73-827.000.
Roper Corporation: *See—*
Butts, Orville R., 4,454,501, Cl. 340-365.00R.
Rosauer, Peter J., to Magnaflux Corporation. Spinning probe apparatus for inspection of bolt holes and the like. 4,454,473, Cl. 324-262.000.
Rosen, William E.: *See—*
Berke, Philip A.; and Rosen, William E., 4,454,133, Cl. 424-267.000.
Rosenquist, Niles R., to General Electric Company. Flame retardant copolyester-carbonate compositions. 4,454,275, Cl. 524-164.000.
Ross, Edsel O.: *See—*
Moyers, Michael E.; and Ross, Edsel O., 4,453,417, Cl. 73-861.420.
Ross, Sidney D.; and Finkelstein, Manuel, to Sprague Electric Company. Electrolytic capacitor containing a mixed solvent system. 4,454,567, Cl. 361-433.000.
Roth, Mario: *See—*
Karla, Heinz; and Roth, Mario, 4,453,669, Cl. 237-12.30R.
Rothera, Jacques: *See—*
Gueguen, Daniel; and Rothera, Jacques, 4,453,681, Cl. 242-107.40A.

Rothwell, Harold L., Jr.: *See—*
English, George J.; Rothwell, Harold L., Jr.; and Keeffe, William M., 4,454,450, Cl. 313-620.000.

Rotunda, John R.: *See—*
Fasching, George E.; and Rotunda, John R., 4,453,949, Cl. 48-77.000.

Rounsley, Robert R.: *See—*
Powell, Calvin J.; and Rounsley, Robert R., 4,453,404, Cl. 73-159.000.

Rousseau, Alain; and Ramel, Francois, to EFFA Etudes, Societe a Responsabilite Limitee . Flow-meter for fluids, with constant pressure loss. 4,453,418, Cl. 73-861.580.

Roussel UCLAF: *See—*
Christidis, Yani; and Barzaghi, Fernando, 4,454,155, Cl. 424-317.000.

Roussin, Michael A., to Caterpillar Tractor Co. Modular impact ripper assembly. 4,453,772, Cl. 299-37.000.

Ruben, Henning: *See—*
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Rueppel, Melvin L.: *See—*
Ting, Chihyuan C.; Tomkins, David F.; and Rueppel, Melvin L., 4,454,043, Cl. 210-659.000.

Ruggeberg, Bruno, Sr.; and Moniz, James R. Window thermal insulation device. 4,453,585, Cl. 160-354.000.

Ruhrchemie Aktiengesellschaft: *See—*
Schmitz, Hans-Peter; and Schleper, Bernard, 4,453,410, Cl. 73-640.000.

Rummings, Lewis J.: *See—*
Barker, Henry P.; and Rummings, Lewis J., 4,454,089, Cl. 264-140.000.

Russell, Jack M. Portable desk. 4,453,788, Cl. 312-231.000.

Russell, John W., to United States of America, Air Force. Simulation of an electronic countermeasure technique. 4,454,513, Cl. 343-18.00E.

Russell, Robert J., II, to Technical Materials, Inc. Solder handling. 4,453,662, Cl. 228-56.000.

Rustici, David: *See—*
Buck, Dean C.; Warren, Richard E.; Smith, David E.; and Rustici, David, 4,453,825, Cl. 356-5.000.

Ryan, Austin T., to Ryan, Doreen Rose. Feeding granular material into a gas stream. 4,453,866, Cl. 406-70.000.

Ryan, Doreen Rose: *See—*
Ryan, Austin T., 4,453,866, Cl. 406-70.000.

Ryan, Kenneth M.: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Sletzinger, Meyer; and Shinkai, Ichiro, 4,454,332, Cl. 560-039.000.

Ryan, Thomas G., to Cyclops Corporation. Floor and roof deck. 4,453,349, Cl. 52-28.000.

Ryobi Ltd.: *See—*
Shinmoto, Takahiko, 4,453,466, Cl. 101-240.000.

S.G. Owen Limited: *See—*
Cockeram, John M.; and Wurmb, Herbert, 4,454,009, Cl. 204-15.000.

S.N.E.C.M.A.: *See—*
Forestier, Alexandre, 4,453,891, Cl. 416-220.00R.

Sacre, Jean-Paul: *See—*
Chion, Pierre; Menault, Jacques; Rodier, Henry; and Sacre, Jean-Paul, 4,454,091, Cl. 264-171.000.

Saegusa, Nobuaki: *See—*
Hiraga, Masaharu; Kogima, Tadao; and Saegusa, Nobuaki, 4,453,899, Cl. 418-55.000.

Safety Lights Sales & Leasing, Inc.: *See—*
Sutton, Russell L.; and Bradberry, George, 4,453,863, Cl. 405-282.000.

Safonnikov, Anatoly N.; and Antonov, Anatoly V., to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR. Method, welding flux, and apparatus for electroslag welding. 4,454,406, Cl. 219-73.100.

Sagara, Seiji: *See—*
Miyake, Hiroyuki; Sagara, Seiji; Kagiura, Kazuo; Sasaki, Nobukazu; and Yonemori, Takaji, 4,453,824, Cl. 355-57.000.

Sahar, Raphael. Battery operated spinning top. 4,453,342, Cl. 446-37.000.

Saint-Gobain Vitrage: *See—*
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Saitoh, Mitsuo, to Citizen Watch Company Limited. Movement structure for hand display type electronic watch. 4,453,833, Cl. 368-88.000.

Saji, Hideo; Yamauchi, Yasutaka; and Kobashi, Mamoru, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Device for controlling the idling speed of an engine. 4,453,515, Cl. 123-339.000.

Sakae, Mitsuhisa; and Hattori, Masaharu, to Kabushiki Kaisha Komatsu Seisakusho. Engine overheat prevention system. 4,453,512, Cl. 123-198.00D.

Sakaguchi, Jiroh, to Hitachi, Ltd. Reference voltage generator. 4,454,467, Cl. 323-313.000.

Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, to Ricoh Company Limited. Electrophotographic photoconductor. 4,454,212, Cl. 430-59.000.

Sakai, Nobuo; Seoka, Yoshio; and Aoki, Kozo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,454,225, Cl. 430-505.000.

Sakata, Sooji; and Miura, Haruo, to Hitachi, Ltd. Stacked rotor. 4,453,889, Cl. 416-198.00A.

Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the low polymerization of isobutene. 4,454,367, Cl. 585-533.000.

Sakurai, Katukiyo: *See—*
Noyori, Ryoji; Suzuki, Sakaru; Okayama, Minoru; Sakurai, Katukiyo; Kamohara, Shigeyoshi; and Ueno, Yoshio, 4,454,123, Cl. 424-180.000.

Salee, Gideon: *See—*
Ranade, Gautam R.; and Salee, Gideon, 4,454,300, Cl. 525-71.000.

Salzegber, Daniel E., to Stanadyne, Inc. Apparatus for adjusting the timing of a fuel injection pump. 4,453,522, Cl. 123-502.000.

Salzmann, Theodor: *See—*
Blaschke, Felix; and Salzmann, Theodor, 4,454,461, Cl. 318-717.000.

Samatsu, Yasuo: *See—*
Arikawa, Tetsuro; and Samatsu, Yasuo, 4,453,782, Cl. 303-116.000.

Samcoe Holding Corporation: *See—*
Diggle, Edmund A., Jr.; and Cecere, Andrew P., 4,454,171, Cl. 427-209.000.

Sanden Corporation: *See—*
Hiraga, Masaharu; Kogima, Tadao; and Saegusa, Nobuaki, 4,453,899, Cl. 418-55.000.

Sander, Engelbert; and Jeker, Rudolf, to Automation Industrielle SA. Induction welding apparatus for laminated tubes. 4,454,402, Cl. 219-10.530.

Sanders, Robert E.; and Seibolt, Bernard P., to Hallmark Cards, Incorporated. Diary with combination-controlled lock. 4,453,743, Cl. 281-18.000.

Sanders, Winfred J.: *See—*
Menon, Govind K.; and Sanders, Winfred J., 4,454,137, Cl. 424-245.000.

Sands, Robert E., to Mueller Co. Check valve assembly for use in backflow preventers or the like. 4,453,561, Cl. 137-327.000.

Saner, Kaspar: *See—*
Wirth, Johannes; Gallo, Mario; and Saner, Kaspar, 4,453,608, Cl. 177-210.0FP.

Sanwa Tekki Corporation: *See—*
Oda, Osamu; Noda, Hiroji; Iwase, Masaru; and Ishii, Yoshio, 4,454,389, Cl. 191-43.000.

Sarjeant, Peter T.: *See—*
Dilling, Peter; and Sarjeant, Peter T., 4,454,066, Cl. 260-124.00R.

Sasaki, Masaomi: *See—*
Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Sasaki, Masaomi, 4,454,212, Cl. 430-59.000.

Sasaki, Nobukazu: *See—*
Miyake, Hiroyuki; Sagara, Seiji; Kagiura, Kazuo; Sasaki, Nobukazu; and Yonemori, Takaji, 4,453,824, Cl. 355-57.000.

Sasaki, Takuma; and Sugino, Yukio, to Takeda Chemical Industries, Ltd. Carboxymethylated derivatives of β-1,3-glucan. 4,454,315, Cl. 536-18.200.

Sasaki, Takuma: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.

Sasamoto, Hisaya: *See—*
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Sasamoto, Hisaya; Yamashita, Seiji; and Takahashi, Noriyoshi, 4,454,460, Cl. 318-491.000.

Sassiver, Martin L.: *See—*
Curran, William V.; Sassiver, Martin L.; and Boothe, James H., 4,454,336, Cl. 560-13.000.

Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, to Eisai Co., Ltd.; and General Director of the Agency of Industrial Science and Technology. Two-functional-group-containing terpenoids, processes for the preparation of the same, and anti-ulcer agents containing the same. 4,454,330, Cl. 549-420.000.

Sato, Jinichi; Kurusu, Toshiro; Ota, Masao; and Mizutani, Terumasa, to Sato Shokuhin Kogyo Kabushiki Kaisha. Preparation of alcohol-containing powders. 4,454,165, Cl. 426-592.000.

Sato, Katsumi: *See—*
Hirota, Yojiro; Shinhama, Koichi; Sato, Katsumi; and Wada, Takuo, 4,454,131, Cl. 424-248.510.

Sato, Kazuo; Takasumi, Masakazu; Shiohata, Kouki; Ohmori, Motoji; Shiga, Motohiro; and Fujisawa, Fumio, to Hitachi, Ltd. Vibration diagnosis method and apparatus for rotary machines. 4,453,407, Cl. 73-462.000.

Sato, Mikio: *See—*
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,454,057, Cl. 252-299.100.

Sato, Moriichi: *See—*
Shoji, Mitsuyoshi; Oe, Etsuo; Honma, Yoshiharu; Komatsuzaki, Shigeki; Sato, Moriichi; and Ito, Ren, 4,454,052, Cl. 252-68.000.

Sato Shokuhin Kogyo Kabushiki Kaisha: *See—*
Sato, Jinichi; Kurusu, Toshiro; Ota, Masao; and Mizutani, Terumasa, 4,454,165, Cl. 426-592.000.

Sato, Yoshiaki: *See—*
Suzuki, Hirosuke; Mizukami, Chiaki; and Sato, Yoshiaki, 4,454,249, Cl. 521-54.000.

Satoh, Masaru: *See—*
Yamatsu, Isao; Inai, Yuichi; Suzuki, Takeshi; Abe, Shinya; Satoh, Masaru; and Seto, Naosuke, 4,454,126, Cl. 424-212.000.

Satoh, Toshihiko; and Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Device for recording data on film of a camera. 4,453,814, Cl. 354-107.000.

Satsuma, Michio: *See*—
Hori, Yutaka; Sunakawa, Makoto; and Satsuma, Michio, 4,453,997, Cl. 156-305.000.

Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Benzylsulfonyl isocyanates. 4,454,334, Cl. 560-12.000.

Sauerwald, Walter; Weck, Bernd; and Schmidts, Klaus, to Hoesch Maschinenfabrik Deutschland AG. Tool support. 4,453,435, Cl. 82-1.400.

Saumell, Luis E., to International Flavors & Fragrances Inc. Method of forming the bridge portion in a frame for eyeglasses. 4,454,090, Cl. 264-154.000.

Sautter, Wolfgang; and Muller, Rudolf, to Bayerische Motoren Werke A.G. Suspension system with control for the toe-in of non-steered wheels. 4,453,733, Cl. 280-661.000.

Savage, Allen L.: *See*—
Hausler, Rudolf H.; Savage, Allen L.; and Harrell, Jack B., Jr., 4,454,006, Cl. 204-1.00T.

Savin Corporation: *See*—
Landa, Benzion, 4,454,215, Cl. 430-115.000.

Savit, Joseph. Chemical solution for increasing the surface conductivity and/or the volume conductivity of a substrate. 4,454,058, Cl. 252-500.000.

Sawayama, Noboru; and Ikesue, Masumi, to Ricoh Company, Ltd. Toner recirculating and agitating device for dry process developing apparatus. 4,453,493, Cl. 118-658.000.

Schafer, Paul: *See*—
Abel, Heinz; Schafer, Paul; and Berendt, Hans-Ulrich, 4,453,946, Cl. 8-603.000.

Schaffert, Kurt R.: *See*—
Schneiderhan, Edward M.; Pathe, Micheal V.; and Schaffert, Kurt R., 4,454,583, Cl. 364-449.000.

Schaffner, Kurt: *See*—
Demuth, Martin; and Schaffner, Kurt, 4,454,352, Cl. 568-374.000.

Schantz, John S.; and Schantz, Raymond G., to Schantz & Sons, Inc. Marquee for concession stand trailers. 4,453,350, Cl. 52-64.000.

Schantz, Raymond G.: *See*—
Schantz, John S.; and Schantz, Raymond G., 4,453,350, Cl. 52-64.000.

Schantz & Sons, Inc.: *See*—
Schantz, John S.; and Schantz, Raymond G., 4,453,350, Cl. 52-64.000.

Schanze, Rudolf. Concentrate containing trace elements suitable for human beings and animals, a process for its production and its use. 4,454,162, Cl. 426-74.000.

Scharenberg, R. Ted: *See*—
Smith, David J.; Scharenberg, R. Ted; and Beck, William W., 4,454,084, Cl. 264-40.100.

Schaum-Chemie Wilhelm Bauer GmbH & Co. KG: *See*—
Frisch, Kurt C.; and Baumann, Heinz, 4,454,251, Cl. 521-107.000.

Scheffer, Johan: *See*—
Landgraber, Herbert; Kowalski, Werner; Scheffer, Johan; and Haas, Hans, 4,454,054, Cl. 252-135.000.

Scheideler, Gregg S.: *See*—
DeMasi, Dominick F.; and Scheideler, Gregg S., 4,453,979, Cl. 106-188.000.

Scheidler, Herwig; and Keller, Gunther, to Schott Glaswerke. Frame for plates of glass, vitreous ceramic or similar material, particularly for cooker hobs. 4,453,533, Cl. 126-211.000.

Scheithauer, Richard A.; Vanderpool, Clarence D.; Miller, Michael J.; and MacInnis, Martin B., to GTE Products Corporation. Process for reclaiming tungsten from a hazardous waste. 4,454,098, Cl. 423-55.000.

Schenectady Chemicals, Inc.: *See*—
Laganis, Deno; and Yodis, John, 4,454,197, Cl. 428-379.000.

Schering Aktiengesellschaft: *See*—
Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, 4,453,966, Cl. 71-88.000.
Boroschewski, Gerhard; Nusslein, Ludwig; and Arndt, Friedrich, 4,453,973, Cl. 71-105.000.
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.

Schering Corporation: *See*—
Villani, Frank J., 4,454,143, Cl. 424-263.000.

Schibbye, Lars; and Englund, Arnold, to Sullair Technology AB. Valve system for capacity control of screw compressors. 4,453,900, Cl. 418-99.000.

Schiele, Ulrich: *See*—
Zimmerman, Eberhard; and Schiele, Ulrich, 4,453,939, Cl. 604-368.000.

Schier, Rainer, to Zahnradfabrik Friedrichshafen AG. Oil reservoir, in particular for hydraulic steering systems. 4,454,031, Cl. 210-86.000.

Schindler, Erich; and Maier, Franz, to Akzo NV. Process for producing asymmetrical hollow filament membranes of polyamide. 4,454,085, Cl. 264-41.000.

Schirmann, Peter J.: *See*—
Cady, Susan M.; Blank, Werner J.; and Schirmann, Peter J., 4,454,301, Cl. 525-118.000.

Schleeter, Robert H. Car washing machine. 4,453,284, Cl. 15-97.00B.

Schleinitz, Henry M.: *See*—
Buckfelder, John J.; and Schleinitz, Henry M., 4,454,176, Cl. 427-246.000.

Schlemmer, Robert, to Firestone Tire & Rubber Company, The. Motorized tool for joining self adhesive plies of unvulcanized rubber. 4,454,000, Cl. 156-502.000.

Schleper, Bernard: *See*—
Schmitz, Hans-Peter; and Schleper, Bernard, 4,453,410, Cl. 73-640.000.

Schlosser, Erich J., to Weber-Stephen Products Co. Outdoor cooking device. 4,453,530, Cl. 126-25.00R.

Schlosser, Ewald: *See*—
Marschall, Peter; Schlosser, Ewald; and Wolk, Claus, 4,454,603, Cl. 372-46.000.

Schmid, Gunter, to Wacker-Chemie GmbH. Transition metal-complex compounds and method for making the same. 4,454,070, Cl. 260-429.00R.

Schmidt, Helmut: *See*—
Ong, Sienling; Karsunky, Ulrich; and Schmidt, Helmut, 4,454,279, Cl. 524-376.000.

Schmidt, Peter: *See*—
Rapp, Werner; and Schmidt, Peter, 4,454,392, Cl. 200-61.670.

Schmidts, Klaus: *See*—
Sauerwald, Walter; Weck, Bernd; and Schmidts, Klaus, 4,453,435, Cl. 82-1.400.

Schmitz, Hans-Peter; and Schleper, Bernard, to Ruhrchemie Aktiengesellschaft. Method and apparatus for locating material defects in hollow bodies. 4,453,410, Cl. 73-640.000.

Schneider, Frederick W.: *See*—
Mondou, Eugene R.; and Schneider, Frederick W., 4,453,984, Cl. 134-22.190.

Schneider, Heinz-Walter: *See*—
Kummer, Rudolf; Taglieber, Volker; and Schneider, Heinz-Walter, 4,454,358, Cl. 568-885.000.

Schneider, Robert L. Aerodynamic load distribution simulator. 4,453,413, Cl. 73-802.000.

Schneiderhan, Edward M.; Pathe, Micheal V.; and Schaffert, Kurt R., to Signal Scanning Products, Inc. Navigation system. 4,454,583, Cl. 364-449.000.

Schoggen, Howard L.: *See*—
Colgrove, Donald A.; Schoggen, Howard L.; and Wray, Kenneth D., 4,454,359, Cl. 568-916.000.

Scholl, Inc.: *See*—
Marsh, Marion, 4,453,322, Cl. 36-11.500.

Schott Glaswerke: *See*—
Scheidler, Herwig; and Keller, Gunther, 4,453,533, Cl. 126-211.000.

Schroder, Gunther: *See*—
Gessinger, Gernot; and Schroder, Gunther, 4,453,985, Cl. 148-11.50N.

Schroder, Ludwig; Stransky, Werner; Mengel, Rudolf; and Linden, Gerbert, to Celamerck GmbH & Co., KG. Phenoxy pyridine derivatives and herbicidal compositions containing same. 4,453,972, Cl. 71-94.000.

Schubert, Hans; and Baessler, Konrad, to Hoechst Aktiengesellschaft. Process for the preparation of p-nitrophenetole. 4,454,355, Cl. 568-584.000.

Schubert, Keith E., to Pitney Bowes Inc. Encoder/actuator for postage meter. 4,454,412, Cl. 235-101.000.

Schucker, Thomas R., to Allis-Chalmers Corporation. Vibration-dampened discharge ring for bulb hydraulic turbines. 4,453,887, Cl. 415-119.000.

Schuller, Ivan K.: *See*—
Werner, Thomas R.; Falco, Charles M.; and Schuller, Ivan K., 4,454,495, Cl. 338-195.000.

Schumacher, Heinz O.; and Thiem, Heinz H. Apparatus for trouble-free and continuous charging of extractors with extraction feedstock to be treated and with extractant or solvent. 4,453,832, Cl. 366-167.000.

Schuster, Peter: *See*—
Penzhorn, Ralf-Dieter; and Schuster, Peter, 4,454,062, Cl. 252-630.000.

Schutt, Bernd: *See*—
Volkmar, Werner; and Schutt, Bernd, 4,454,393, Cl. 200-82.00R.

Schwam, Harvey: *See*—
Woltersdorf, Otto, Jr.; Schwam, Harvey; Michelson, Stuart R.; and Sondey, John M., 4,454,148, Cl. 424-270.000.

Schwarz, Norbert: *See*—
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.

Schweier, Guenther; Gruber, Wolfgang; Metzger, Werner; and Hennenberger, Peter, to BASF Aktiengesellschaft. Preparation of propylene/ethylene block copolymers. 4,454,299, Cl. 525-53.000.

Schwendtner, Manfred; and Steinmuller, Gunter, to Siemens Aktiengesellschaft. Electronic arrangement for determination of reactive power. 4,454,471, Cl. 324-141.000.

Schwenk, Wilhelm: *See*—
Heinrich, Bruno; and Schwenk, Wilhelm, 4,454,172, Cl. 427-234.000.

Schwertfeger, Werner: *See*—
Siegemund, Gunter; and Schwertfeger, Werner, 4,454,072, Cl. 260-458.00F.

SCM Corporation: *See*—
Brunbeck, Richard T.; and Sherwood, Joseph C., 4,454,048, Cl. 210-726.000.
Hemker, Wilfred J., 4,454,113, Cl. 424-63.000.

Scott, Blayney J.: *See*—
Houghton-Brown, Patrick D.; and Scott, Blayney J., 4,453,485, Cl. 114-144.00A.

Scott, Raymond G.: *See*—
Roccaforte, Harry I.; and Scott, Raymond G., 4,453,665, Cl. 229-41.00B.

Sedillot, Francois G.; Hudson, William L.; and Castellan, Bernard, to Compagnie Generale pour les Developpements Operationnels des Richesses sous-Marines"C. G. Doris". Device for connecting and disconnecting the swivel of an oscillating marine platform and a method for putting the said device into use. 4,453,859, Cl. 405-202.000.

Seeger, Karl: *See*—
Mencke, Burkhard; Ehlers, Eberhard; Blumbach, Jurgen; Durckheimer, Walter; and Seeger, Karl, 4,454,129, Cl. 424-246.000.

Sehres, Lynn. Bra-size calculator. 4,454,409, Cl. 235-78.00R.

Seibolt, Bernard P.: *See*—
Sanders, Robert E.; and Seibolt, Bernard P., 4,453,743, Cl. 281-18.000.

Seikagaku Kogyo Co. Ltd.: *See*—
Noyori, Ryoji; Suzuki, Sakaru; Okayama, Minoru; Sakurai, Katukiyo; Kamohara, Shigeyoshi; and Ueno, Yoshio, 4,454,123, Cl. 424-180.000.

Seiki Kabushikikaisha: *See*—
Kuwana, Kazutaka; Ueda, Masahiro; and Nonoyama, Seiji, 4,453,725, Cl. 280-6.00R.

Sekisui Plastics: *See*—
Hayashi, Motoshige; Tanaka, Shigetoshi; Yoshii, Motokazu; and Doi, Tsuneo, 4,454,087, Cl. 264-53.000.

Sell, Leslie J., to Paccar of Canada Ltd. Multiple-speed winch or drum drive. 4,453,430, Cl. 74-770.000.

Semiconductor Research Foundation: *See*—
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Tamamushi, Takashige, 4,454,526, Cl. 357-30.000.

Senda, Masanori: *See*—
Wada, Satomi; Senda, Masanori; Horii, Takashi; and Ota, Yozo, 4,454,076, Cl. 261-44.00C.

Senese, Frank J.; and Baillie, Lloyd A., to Atlantic Richfield Company. Leak detector. 4,453,400, Cl. 73-49.200.

Senftle, Frank E.: *See*—
Patton, Keith M.; and Senftle, Frank E., 4,453,594, Cl. 166-248.000.

Sennott, Susan C.; Mulligan, Dorothy M.; Sennott, William J., III; Mulligan, Richard T.; and Barton, Richard E. Hair dryer mount. 4,453,695, Cl. 248-660.000.

Sennott, William J., III: *See*—
Sennott, Susan C.; Mulligan, Dorothy M.; Sennott, William J., III; Mulligan, Richard T.; and Barton, Richard E., 4,453,695, Cl. 248-660.000.

Sentman, Lowell: *See*—
Ronemus, James R.; Sentman, Lowell; and Wanesky, William R., 4,453,414, Cl. 73-827.000.

Sentralinstitutt for Industriell Forskning: *See*—
Zwilgmeyer, Dagfinn, 4,453,357, Cl. 52-309.800.

Seoka, Yoshio: *See*—
Sakai, Nobuo; Seoka, Yoshio; and Aoki, Kozo, 4,454,225, Cl. 430-505.000.

Serra, Gilbert M.; Fortier, Larry; and Valentino, Ernest N. Method for storing hazardous or toxic waste material. 4,453,857, Cl. 405-128.000.

Sesamat Anstalt: *See*—
Riedel, Tilo H., 4,453,290, Cl. 24-70.0SK.

Seto, Naosuke: *See*—
Yamatsu, Isao; Inai, Yuichi; Suzuki, Takeshi; Abe, Shinya; Satoh, Masaru; and Seto, Naosuke, 4,454,126, Cl. 424-212.000.

Shaffer, Elwood: *See*—
Fayerman, Peter; and Shaffer, Elwood, 4,453,753, Cl. 292-348.000.

Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., to University of Florida. Low viscosity stable mixtures of coal and fuel oil containing alcohol. 4,453,947, Cl. 44-51.000.

Shahani, Chandru T.: *See*—
Flowers, Thomas A.; Vinch, Samuel D.; and Shahani, Chandru T., 4,454,187, Cl. 428-159.000.

Shallenberger, Frank K. Sail assembly for vessels. 4,453,483, Cl. 114-102.000.

Shanabarger, Francis X. Bee hive frame spacer. 4,453,281, Cl. 6-2.00A.

Shanley, Edward S.: *See*—
Doggett, Roger H.; and Shanley, Edward S., 4,453,278, Cl. 4-228.000.

Shannon, Robert A.: *See*—
Finke, Harry P.; and Shannon, Robert A., 4,453,915, Cl. 432-11.000.

Sharma, Yash. Rack or holder for test tubes. 4,453,639, Cl. 211-74.000.

Sharp Kabushiki Kaisha: *See*—
Takeuji, Koichi, 4,453,690, Cl. 248-309.100.

Sharps, David L., to Du Pont de Nemours, E. I., and Company. Disc stirrer. 4,453,867, Cl. 366-98.000.

Shaw, Arthur. Monolithic water-permeable concrete roadway and related large area structures with integral drainage elements. 4,453,844, Cl. 404-72.000.

Shaw, Lockburn S.: *See*—
Groutage, Frederick D.; Conjerti, Samuel N.; and Shaw, Lockburn S., 4,453,426, Cl. 74-2.000.

Shell Containers, Inc. (PA): *See*—
Cohen, Joel B.; and Marhefka, Matthew D., 4,453,790, Cl. 312-348.000.

Shell Oil Company: *See*—
Lorek, Georges; and Blondet, Joel C. F., 4,453,674, Cl. 239-483.000.

Shenoha, James L. Heat conducting magnetic type holder for imprinters. 4,453,468, Cl. 101-382.0MV.

Shenoy, Vittal U., to Xerox Corporation. Control for a corona discharge device. 4,454,559, Cl. 361-214.000.

Sherman, Dudley M.: *See*—
Hendrickson, William A.; Sherman, Dudley M.; Chou, Hsin-hsin; and Kolpe, Vasant V., 4,454,186, Cl. 428-148.000.

Sherwood, Joseph C.: *See*—
Brunbeck, Richard T.; and Sherwood, Joseph C., 4,454,048, Cl. 210-726.000.

Shibata, Koichi: *See*—
Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, 4,454,296, Cl. 528-75.000.

Shibuya, Chisei: *See*—
Murakami, Masahiro; Kobayashi, Masateru; Yamamoto, Kimiyo; and Shibuya, Chisei, 4,454,323, Cl. 548-251.000.

Shick, Lloyd G.: *See*—
Franz, Helmut; Hanlon, James H.; and Shick, Lloyd G., 4,454,203, Cl. 428-520.000.

Shiga, Motohiro: *See*—
Sato, Kazuo; Takasumi, Masakazu; Shiohata, Kouki; Ohmori, Motoji; Shiga, Motohiro; and Fujisawa, Fumio, 4,453,407, Cl. 73-462.000.

Shigemoto, Shigeru: *See*—
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Shigemoto, Shigeru, 4,454,302, Cl. 525-167.000.

Shikasho, Satoru, to International Telephone and Telegraph Corporation. Pressure memory device. 4,453,411, Cl. 73-709.000.

Shimada, Junichi: *See*—
Hidaka, Takehiko; Morikawa, Takitaro; Shimada, Junichi; and Kumata, Ken, 4,453,803, Cl. 350-96.320.

Shimizu, Masami; and Nakamura, Fusayoshi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Thrust bearing for turbocharger. 4,453,837, Cl. 3.84-121.000.

Shimizu, Shigeo: *See*—
Koyama, Hiroaki; and Shimizu, Shigeo, 4,454,298, Cl. 528-137.000.

Shimizu, Shizuo; Abe, Shunji; and Matsuda, Akira, to Mitsui Petrochemical Industries, Ltd. Method of producing partially crosslinked rubber-resin composition. 4,454,092, Cl. 264-349.000.

Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, to Chiyoda Chemical Engineering and Construction Co., Ltd. Apparatus for biological treatment of waste water in downflow operation. 4,454,038, Cl. 210-150.000.

Shimoni, Moshe: *See*—
Cais, Michael; and Shimoni, Moshe, 4,454,231, Cl. 436-500.000.

Shimotsu, Tadao: *See*—
Yamashita, Seizi; Miyashita, Kunio; Tanabe, Syoji; and Shimotsu, Tadao, 4,454,438, Cl. 310-162.000.

Shimura, Kisaburo; Utsuda, Tetsuji; Suda, Hironobu; and Kobayashi, Koji, to Toppan Printing Co., Ltd. Method and apparatus for correcting video signals in color printing simulation. 4,454,536, Cl. 358-76.000.

Shinhama, Koichi: *See*—
Hirota, Yojiro; Shinhama, Koichi; Sato, Katsumi; and Wada, Takuo, 4,454,131, Cl. 424-248.510.

Shinkai, Ichiro: *See*—
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Sletzinger, Meyer; and Shinkai, Ichiro, 4,454,332, Cl. 560-039.000.

Shinmoto, Takahiko, to Ryobi Ltd. Paper discharge device for offset printing machine. 4,453,466, Cl. 101-240.000.

Shinneman, Leonice L. Percussion instruments bow. 4,453,447, Cl. 84-422.00S.

Shinwa Ltd.: *See*—
Suzuki, Shinichi, 4,454,036, Cl. 210-117.000.

Shiohata, Kouki: *See*—
Sato, Kazuo; Takasumi, Masakazu; Shiohata, Kouki; Ohmori, Motoji; Shiga, Motohiro; and Fujisawa, Fumio, 4,453,407, Cl. 73-462.000.

Shiomi, Tomoko: *See*—
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.

Shirk, Albert, to AMP Incorporated. Manufacture of dense, flat conductor connectors. 4,453,309, Cl. 29-884.000.

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Borden, Ernest C.; and Shrago, Earl S., 4,454,115, Cl. 424-85.000.

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Kuhlmann, Herbert; and Rieger, Kurt, 4,453,500, Cl. 122-510.000.

Sidey, Roger, to United States of America, Air Force. Pressure sensor and soil stress isolation filter arrangement in a pore pressure probe. 4,453,401, Cl. 73-73.000.

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Konnikov, Mikhail N.; and Gorelik, Boris E., 4,453,392, Cl. 72-75.000.
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Koob, Lothar, 4,454,423, Cl. 250-374.000.
Luder, Rainer; and Haussmann, Wolfgang, 4,454,534, Cl. 358-31.000.
Patalong, Hubert, 4,454,527, Cl. 357-38.000.
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Little, Thomas R.; Kleinecke, John D.; and Farag, Samir F., 4,454,564, Cl. 361-336.000.
Siemens Gammasonics, Inc.: *See*—
Persyk, Dennis E., 4,454,422, Cl. 250-363.00S.
Siffroi, Lucien: *See*—
Belbel, Elie; Haury, Andre ; Fechant, Louis; and Siffroi, Lucien, 4,454,490, Cl. 335-16.000.
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Schneiderhan, Edward M.; Pathe, Micheal V.; and Schaffert, Kurt R., 4,454,583, Cl. 364-449.000.
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Kates, James M., 4,454,609, Cl. 381-68.000.
Sika AG, vorm. Kaspar Winkler & Co.: *See*—
Burge, Theodor; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,454,311, Cl. 528-245.000.
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Hill, Lorimer K., 4,454,523, Cl. 357-15.000.
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Bradshaw, Richard L.; Falcone, Samuel J.; and Simonetti, Alexander, 4,454,282, Cl. 524-407.000.
Simpson, Donald A.: *See*—
Freeman, Lawrence M.; and Simpson, Donald A., 4,453,504, Cl. 123-52.00B.
Singer, Arnold M.; and Oliver, John E. Drilling mud displacement process. 4,453,598, Cl. 166-312.000.
Singer Company, The: *See*—
Graham, Thomas G., 4,453,624, Cl. 192-67.00R.
Larsen, Robert H.; and Giaimo, Anthony, 4,453,480, Cl. 112-254.000.
Weisz, William, 4,453,478, Cl. 112-158.00A.
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and Christenson, Roger M., to PPG Industries, Inc. Aminoplast curable coating compositions containing cycloaliphatic sulfonic acid esters as latent acid catalysts. 4,454,274, Cl. 524-157.000.
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Singhal, Gopal H.; and Stuntz, Gordon F., to Exxon Research and Engineering Co. Hydroconversion process. 4,454,024, Cl. 208-111.000.
Sinko, George E., to Gesco International. Method and apparatus for microfiltration of blood. 4,453,927, Cl. 604-52.000.
Sirovy, Robert L., to Binks Manufacturing Company. Plural component flushless spray gun. 4,453,670, Cl. 239-117.000.
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Quick, James E., 4,454,141, Cl. 424-260.000.
SKF Steel Engineering AB: *See*—
Eriksson, Sune; and Bjorling, Gotthard, 4,454,013, Cl. 204-112.000.
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, to Schering Aktiengesellschaft. 9-Fluoroprostaglandin derivatives, and use as medicinal agents. 4,454,339, Cl. 560-55.000.
Slater, William; and Kenny, Michael, to Grow Group, Inc. Coatings for rusted metallic surfaces. 4,453,988, Cl. 148-6.14R.
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Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Sletzinger, Meyer; and Shinkai, Ichiro, 4,454,332, Cl. 560-039.000.
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Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.
Smilow, George; and Kayen, Samuel L., to B & G Plastics, Inc. Display hanger for belts. 4,453,655, Cl. 223-87.000.
Smith, David E.: *See*—
Buck, Dean C.; Warren, Richard E.; Smith, David E.; and Rustici, David, 4,453,825, Cl. 356-5.000.
Smith, David J.; Scharenberg, R. Ted; and Beck, William W., to Leesona Corporation. Extrusion die control system. 4,454,084, Cl. 264-40.100.
Smith, Donald W., to Eastman Kodak Company. Set-up recall apparatus. 4,453,821, Cl. 355-14.00C.
Smith, Harry: *See*—
Buckle, Derek R.; and Smith, Harry, 4,454,136, Cl. 424-245.000.
Smith, Harry D., Jr., to Texaco Inc. Neutron-inelastic gamma radiation well logging method and apparatus with background radiation accounted for. 4,454,420, Cl. 250-270.000.
Smith, Henry E., to Xerox Corporation. Record carrier feed arrangement for a printer. 4,453,847, Cl. 400-645.500.
Smith, Joseph M. Audible fish lure. 4,453,335, Cl. 43-42.310.
Smith, Paul R. Pitch stabilized string suspension system for musical instruments. 4,453,443, Cl. 84-298.000.
Smith, Peter W.: *See*—
Ashkin, Arthur; Smith, Peter W.; and Tomlinson, Walter J., III, 4,453,805, Cl. 350-162.240.
Smith, Richard D. Modular cabinet for different video game cartridges, cassettes, and instruction booklets. 4,453,785, Cl. 312-10.000.
Smith, Robert J., to McDonnell Douglas Corporation. Conductively cooled laser diode array. 4,454,602, Cl. 372-36.000.
Smith, Robert L.: *See*—
Bock, Mark G.; Cragoe, Edward J., Jr.; and Smith, Robert L., 4,454,132, Cl. 424-250.000.
Smith, Rory J. M.; Sykes, Brenda M.; and Terry, Roger S., to Johnson & Johnson. Disposable protective headwear and process and apparatus for its production. 4,453,276, Cl. 2-195.000.
Smith, Terrence; Moore, Thomas S.; and Helmers, Earl L., to Ford Motor Company. Proportioning hydraulic brake mechanism. 4,453,778, Cl. 303-22.00R.
Smith, Wayne E.: *See*—
Florence, David M.; and Smith, Wayne E., 4,454,250, Cl. 521-75.000.
Smith, William T., to Goodyear Tire & Rubber Company, The. Closed torus tire/rim assembly. 4,453,583, Cl. 152-410.000.
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Gilvarg, Charles; and Kingsbury, William D., 4,454,065, Cl. 260-112.50R.
Kruse, Lawrence I., 4,454,337, Cl. 560-22.000.
Menon, Govind K.; and Sanders, Winfred J., 4,454,137, Cl. 424-245.000.
Smythe, John W., to Alloy Metals, Inc. Corrosion resistant thermal spray alloy and coating method. 4,453,976, Cl. 75-251.000.
Snamprogetti S.p.A.: *See*—
Fabbri, Cesare; Bellitto, Gianfranco; La Mantia, Giuseppe; and Failla, Biagio, 4,453,956, Cl. 62-18.000.
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Tamborski, Christ; Snyder, Carl E., Jr.; and Christian, John B., 4,454,349, Cl. 568-13.000.
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Asick, John C.; Landis, John M.; and Snyder, Clair W., Jr., 4,453,798, Cl. 339-143.00R.
Snyder, William C.: *See*—
Whaley, Howard A.; Snyder, William C.; Greenfield, John C.; and Coats, John H., 4,454,228, Cl. 435-253.000.
Societe Anonyme Couvrot Laine & Cie: *See*—
Mahon, Jean, 4,453,831, Cl. 366-65.000.
Societe Anonyme DBA: *See*—
Meynier, Guy, 4,453,380, Cl. 60-534.000.
Meynier, Guy, 4,453,452, Cl. 91-376.00R.
Societe Anonyme dite: Alsthom-Atlantique: *See*—
Thuries, Edmond; Mahl, Maurice; Masson, Jean-Paul; and Malik, Louis, 4,453,679, Cl. 242-54.00A.
Sofranko, John A.: *See*—
Gaffney, Anne M.; and Sofranko, John A., 4,454,342, Cl. 560-204.000.
Solar Development, Inc.: *See*—
Kazimir, Donald J., 4,453,534, Cl. 126-420.000.
Solco Basel AG: *See*—
Laszczower, Max, 4,453,295, Cl. 251-10.000.
Solheim, Karsten; and Cotchonis, N. Eugene, to Karsten Manufacturing Corp. Putting practice device. 4,453,717, Cl. 273-192.000.
Solleder, Otto: *See*—
von der Ohe, Manfred; Flemming, Helmut; Siebelt, Dirk; Konig, Werner; and Solleder, Otto, 4,453,740, Cl. 280-781.000.
Soloway, Gerald S.: *See*—
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,454,593, Cl. 364-900.000.
Sommer, John G.: *See*—
Kuan, Tiong H.; Pantuso, Joseph; and Sommer, John G., 4,453,992, Cl. 156-115.000.
Sondages Injections Forages "S.I.F." Enterprise Bachy: *See*—
Stenne, Roland A. C., 4,453,862, Cl. 405-267.000.
Sondermann, Karl J., to Voest-Alpine Aktiengesellschaft. Arrangement for continuously casting a metal strand. 4,453,589, Cl. 164-440.000.
Sondey, John M.: *See*—
Woltersdorf, Otto, Jr.; Schwam, Harvey; Michelson, Stuart R.; and Sondey, John M., 4,454,148, Cl. 424-270.000.
Sonoco Products Company: *See*—
Decker, William D., 4,453,925, Cl. 604-14.000.

Sony Corporation: *See—*
Yoshinaka, Tadaaki; and Yamashita, Kanji, 4,454,530, Cl. 358-10.000.

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Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Berezniikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Soraoka, Minoru, to Hitachi, Ltd. Wafer gripping device. 4,453,757, Cl. 294-86.00R.

Sorenson, Richard W., to Carlingswitch, Inc. Switch construction. 4,454,400, Cl. 200-315.000.

Sorokin, Viktor A.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonarevsky, Ernst L., 4,453,348, Cl. 51-109.00R.

Sosnowski, Leon; and Mathewson, Thaine. Incinerator and fume separator system and apparatus. 4,454,427, Cl. 290-2.000.

Soulier, Joel, to Isobox S.A. Method and apparatus for molding expandable thermoplastic particles in molds having portions of selected porosity using UHF heating. 4,454,081, Cl. 264-26.000.

South, William H.: *See—*
Kimmel, Donald S.; and South, William H., 4,454,428, Cl. 290-40.00R.

Southard, Gary D., to Siemens Aktiengesellschaft. Adjustable attenuation member for a digital telecommunications system. 4,454,498, Cl. 340-347.0DD.

Spann, Robert J., to Neha International. Power factor motor controller. 4,454,462, Cl. 318-729.000.

Spaulding, Lawrence D.: *See—*
Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,453,505, Cl. 123-90.610.

Speaker, Mark G. Intravenous device. 4,453,933, Cl. 604-179.000.

Spearman, Stephen A.: *See—*
Parham, Marc E.; Spearman, Stephen A.; and Cookson, Gleason O., 4,454,347, Cl. 564-428.000.

Spence, Wendell, to NCR Corporation. Device having implantation for controlling gate parasitic action. 4,454,524, Cl. 357-23.000.

Spencer, Fredric J.; and Turek, Stanley P. Portable grill. 4,453,529, Cl. 126-9.00R.

Sperry Corporation: *See—*
De Coene, Frans J. G. C., 4,453,373, Cl. 56-14.600.
Fedde, George A.; and Gottschalk, Juan M., 4,454,539, Cl. 358-106.000.
Kirk, Kenneth H.; Fedde, George A.; and Gottschalk, Juan M., 4,454,540, Cl. 358-106.000.

Spires, Dewayne A., to Bell Telephone Laboratories, Incorporated. Operational amplifier with improved output capability. 4,454,479, Cl. 330-263.000.

Spitzer, Daniel E. Apparatus for powering a body implant device. 4,453,537, Cl. 128-1.00D.

Spitzer, Wolfgang, to Behringwerke Aktiengesellschaft. Device for the transport of test specimens in strip form to a measuring apparatus. 4,453,406, Cl. 73-432.00R.

Sponseller, David L.; and Straatman, John A., to Amax Inc. Tubular high strength low alloy steel for oil and gas wells. 4,453,986, Cl. 148-12.00F.

Sprague Electric Company: *See—*
Gontowski, Walter S., Jr.; and Chalfin, Edward, 4,454,416, Cl. 250-214.00A.
Ross, Sidney D.; and Finkelstein, Manuel, 4,454,567, Cl. 361-433.000.

SRI International: *See—*
Dawson, Marcia I.; Hobbs, Peter D.; and Derdzinski, Krzysztof A., 4,454,341, Cl. 560-100.000.
Yarborough, John M., Jr., 4,454,499, Cl. 340-347.0DD.

Srinivasan, Nallaswamy; Lijewski, Robert R.; Collins, Arthur K.; and Morse, Royal R., III, to General Electric Company. Real-time cursor generator. 4,454,507, Cl. 340-744.000.

Stacy, Jack C., Jr. Terrain vehicle having a single, latterally bendable track. 4,453,611, Cl. 180-9.440.

Stadnik, George O., to Interactive Entertainment Corp. Light pattern generator. 4,454,568, Cl. 362-32.000.

Stadtmuller, Gunter: *See—*
Kittelmann, Udo; Diehl, Manfred; Bergmann, Roland; and Stadtmuller, Gunter, 4,454,056, Cl. 252-174.150.

Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, to Boehringer Ingelheim KG. Imidazo[1,2-a]imidazoles in the treatment of pain, hypertonia and coronary diseases. 4,454,149, Cl. 424-273.00R.

Stamicarbon B.V.: *See—*
Bijen, Jan M. J. M., 4,454,285, Cl. 524-5.000.

Stanadyne, Inc.: *See—*
Salzegber, Daniel E., 4,453,522, Cl. 123-502.000.

Standard Oil Company (Indiana): *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,454,026, Cl. 208-251.00H.
Holtzberg, Matthew W.; and Spaulding, Lawrence D., 4,453,505, Cl. 123-90.610.
Klotz, Marvin R., 4,454,365, Cl. 585-480.000.

Stania, Herbert: *See—*
Wilfinger, Werner; Behmel, Klaus L.; and Stania, Herbert, 4,453,982, Cl. 106-308.00M.

Starkville Tool and Die Company: *See—*
Garnett, Frederick W.; and Kelly, James C., 4,453,481, Cl. 112-288.000.

Staropoli, Paul R. Interchangeable file cabinet lock assembly. 4,453,787, Cl. 312-215.000.

Stauffer Chemical Company: *See—*
Benjamin, Robert E.; and Edging, Thomas E., 4,454,103, Cl. 423-309.000.
Felix, Raymond A., 4,454,063, Cl. 260-944.000.
Teach, Eugene G., 4,453,968, Cl. 71-90.000.

Steele, Richard S. Sealing system for movable insulation. 4,453,584, Cl. 160-121.00R.

Stefan, Gunter, to Kafko Manufacturing Limited. Pool skimmer. 4,454,035, Cl. 210-117.000.

Steiger, Ezra, to Cleveland Clinic Foundation, The. Catheter tunneling apparatus. 4,453,928, Cl. 604-53.000.

Steinecke, Rudolf: *See—*
Burchard, Hans; and Steinecke, Rudolf, 4,453,737, Cl. 280-725.000.

Steinkuhl, Bernd: *See—*
Merten, Gerhard; Steinkuhl, Bernd; and Breuer, Oswald, 4,453,771, Cl. 299-34.000.

Steinmuller, Gunter: *See—*
Schwendtner, Manfred; and Steinmuller, Gunter, 4,454,471, Cl. 324-141.000.

Stenne, Roland A. C., to Sondages Injections Forages "S.I.F." Esterprise Bachy. Method for ensuring mechanical continuity between two adjacent panels of a reinforced concrete wall cast in the ground. 4,453,862, Cl. 405-267.000.

Stepanjuk, Roman K.: *See—*
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Berezniikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Sterling Drug, Inc.: *See—*
Lewis, Frederick M., 4,453,474, Cl. 110-188.000.
Morgan, Barry A., 4,454,120, Cl. 424-177.000.

Sternheim, Marek A.; and van Gelder, Willem, to AT&T Bell Laboratories. Interferometric method and apparatus for measuring etch rate and fabricating devices. 4,454,001, Cl. 156-626.000.

Steudten, Friedrich: *See—*
Griesshammer, Rudolf; Koppl, Franz; Lorenz, Helmut; and Steudten, Friedrich, 4,454,104, Cl. 423-349.000.

Stickel, Robert M.: *See—*
Aiken, John E.; Fields, Marvin C.; and Stickel, Robert M., 4,454,348, Cl. 564-435.000.

Stoakes, Richard L. Curtain wall constructions. 4,453,355, Cl. 52-235.000.

Stobby, William G.: *See—*
Dechow, Frederick J.; and Stobby, William G., 4,454,257, Cl. 521-157.000.

Stockhaus, Klaus: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Stockhaus, Klaus; Hoefke, Wolfgang; and Gaida, Wolfram, 4,454,149, Cl. 424-273.00R.

Stofko, Jan; and Zavarin, Eugene, to University of California, The Regents of the. Method of increasing interfiber bonding among fibers of lignocellulosic material, and resultant product. 4,454,005, Cl. 162-12.000.

Stombaugh, Jay: *See—*
Orthman, Henry K.; and Stombaugh, Jay, 4,453,601, Cl. 172-311.000.

Stone & Webster Engineering Corp.: *See—*
Norton, Richard C., 4,453,865, Cl. 406-24.000.

Storage Technology Corporation: *See—*
Nayak, Ashok B.; and Laub, Leonard, 4,454,415, Cl. 250-201.000.

Stowe, Lawrence R.: *See—*
Venkatesan, Valadi N.; and Stowe, Lawrence R., 4,454,018, Cl. 208-11.00R.

Straatman, John A.: *See—*
Sponseller, David L.; and Straatman, John A., 4,453,986, Cl. 148-12.00F.

Stramentinoli, Giorgio; and Gennari, Federico, to Bioresearch S.r.l. Adenosine derivatives of anti-inflammatory and analgesic activity, and therapeutic compositions which contain them as their active principle. 4,454,122, Cl. 424-180.000.

Strand, Mette: *See—*
Gansow, Otto A.; and Strand, Mette, 4,454,106, Cl. 424-1.100.

Stransky, Werner: *See—*
Schroder, Ludwig; Stransky, Werner; Mengel, Rudolf; and Linden, Gerbert, 4,453,972, Cl. 71-94.000.

Strasilla, Dieter; Meindl, Hubert; Moldovanyi, Laszlo; and Fearnley, Charles, to Ciba-Geigy Corporation. Quaternary, copolymeric, high molecular weight ammonium salts based on acrylic compounds, and their use in cosmetics for the hair. 4,454,114, Cl. 424-70.000.

Strauss, Michael G.; and Brenner, Raul, to United States of America, Energy. Neutron position-sensitive scintillation detector. 4,454,424, Cl. 250-390.000.

Streefkerk, Hendrik: *See—*
Veldhuizen, Harmen; Streefkerk, Hendrik; and Van Der Tas, Gerhard, 4,453,874, Cl. 414-123.000.

Street, Sidney W.; and Beckely, Don A., to HITCO. Bis-maleimide resin with inhibitor. 4,454,283, Cl. 524-424.000.

Streeter, Robert T.; and Carl, David F., to FiatAllis North America, Inc. Hydraulic steering system with automatic emergency pump flow control. 4,453,451, Cl. 91-28.000.

Strohmeyer, Charles, Jr., to Electrodyne Research Corporation. Integrated control for a steam generator circulating fluidized bed firing system. 4,453,495, Cl. 122-4.00D.

Stroud, Lebern W. Pulsar rotor system and coil winding. 4,454,464, Cl. 322-28.000.

Struthers Wells Corporation: *See*—
Davis, James S., 4,453,497, Cl. 122-4.00D.

Stubbs, Graham S.: *See*—
Lund, John A.; Richardson, David L.; and Stubbs, Graham S., 4,454,543, Cl. 358-118.000.

Studiengesellschaft Kohle mbH: *See*—
Bogdanovic, Borislav, 4,454,243, Cl. 502-167.000.
Demuth, Martin; and Schaffner, Kurt, 4,454,352, Cl. 568-374.000.

Stuntz, Gordon F.: *See*—
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Subkhangulov, Radik S.: *See*—
Ioanesian, Jury R.; Popko, Valery V.; and Subkhangulov, Radik S., 4,453,604, Cl. 175-107.000.

Suda, Hironobu: *See*—
Shimura, Kisaburo; Utsuda, Tetsuji; Suda, Hironobu; and Kobayashi, Koji, 4,454,536, Cl. 358-76.000.

Süddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Fehr, Werner, 4,453,591, Cl. 165-42.000.

Sugawara Industrial Co.: *See*—
Suzuki, Nagayuki, 4,454,192, Cl. 428-294.000.

Sugawara, Tora, to Tokyo Shibaura Denki Kabushiki Kaisha. Power source device for ion sources. 4,454,453, Cl. 315-106.000.

Sugimoto, Kaname: *See*—
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; Sugimoto, Toshiyuki; and Sugimoto, Kaname, 4,454,161, Cl. 426-48.000.

Sugimoto, Toshiyuki: *See*—
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; Sugimoto, Toshiyuki; and Sugimoto, Kaname, 4,454,161, Cl. 426-48.000.

Sugimoto, Yoshihiko: *See*—
Arai, Tohru; and Sugimoto, Yoshihiko, 4,453,987, Cl. 148-15.500.

Sugino Cycle Industries, Ltd.: *See*—
Sugino, Yasushi, 4,453,924, Cl. 474-160.000.

Sugino, Yasushi, to Sugino Cycle Industries, Ltd. Front gear for bicycles. 4,453,924, Cl. 474-160.000.

Sugino, Yukio: *See*—
Sasaki, Takuma; and Sugino, Yukio, 4,454,315, Cl. 536-18.200.

Sugita, Kensei: *See*—
Itoh, Kiyohiko; Mikuni, Yoshihiko; and Sugita, Kensei, 4,454,514, Cl. 343-700.0MS.

Sugita, Yasutoshi; and Ando, Yoshio, to Canon Kabushiki Kaisha. Method of stopping a film. 4,453,823, Cl. 355-50.000.

Suguro, Yoshihiro; Nagamoto, Masanaka; Motosugi, Takanori; Hotta, Yoshihiko; and Watanabe, Toshiyuki, to Ricoh Company, Ltd. Diazo-type thermosensitive recording material. 4,454,521, Cl. 346-208.000.

Sullair Technology AB: *See*—
Schibbye, Lars; and Englund, Arnold, 4,453,900, Cl. 418-99.000.

Sullivan, Edmund J., to United States of America, Navy. Conformal array compensating beamformer. 4,454,597, Cl. 367-12.000.

Sullivan, Robert P., to Combustion Engineering, Inc. Square corner design for ductwork. 4,453,571, Cl. 138-171.000.

Sulser, Ulrich: *See*—
Burge, Theodor; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,454,311, Cl. 528-245.000.

Sumitomo Chemical Company, Limited: *See*—
Inoue, Yasuhiko; Nishizaki, Tadao; and Taguchi, Satoshi, 4,454,357, Cl. 568-804.000.
Mori, Kenji, 4,453,967, Cl. 71-88.000.
Ueno, Katsuji; Maruyama, Takashi; and Hayatsu, Kazuo, 4,454,284, Cl. 524-427.000.

Sumitomo Special Metal Co., Ltd.: *See*—
Koyano, Akio, 4,454,386, Cl. 179-110.00A.

Sun West Solar Systems, Inc.: *See*—
Holliday, Robert A.; and Williamson, Warren L., 4,453,590, Cl. 165-12.000.

Sunaga, Hiromi: *See*—
Tanaka, Ryuichi; Sunaga, Hiromi; Tamura, Naoyuki; and Murakami, Toshio, 4,454,421, Cl. 250-336.100.

Sunakawa, Makoto: *See*—
Hori, Yutaka; Sunakawa, Makoto; and Satsuma, Michio, 4,453,997, Cl. 156-305.000.

SunderRam, A. N.: *See*—
Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., 4,453,947, Cl. 44-51.000.

Sundstrand Data Control, Inc.: *See*—
O'Brien, James P., 4,454,588, Cl. 364-551.000.

Suslova, Lidia P.: *See*—
Balandin, Ivan Y.; Malyarchuk, Alexei A.; Gerasimov, Sergei I.; Suslova, Lidia P.; Alexeenko, Valery V.; Kharchenko, Ivan P.; Sopryazhinsky, Vadim M.; Kononenko, Vladimir N.; Stepanjuk, Roman K.; Bereznikov, Ivan N.; Bondarenko, Alexandr S.; Andrianov, Vladimir N., deceased; Kamentseva, Svetlana A., administrator; and Andrianov, Valery V., administrator, 4,453,612, Cl. 180-124.000.

Susumu Ubukata: *See*—
Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Syozo, 4,454,493, Cl. 337-368.000.

Sutton Laboratories, Inc.: *See*—
Berke, Philip A.; and Rosen, William E., 4,454,133, Cl. 424-267.000.

Sutton, Russell L.; and Bradberry, George, to Safety Lights Sales & Leasing, Inc. Trench shoring device. 4,453,863, Cl. 405-282.000.

Suzuki, Akinori: *See*—
Takematsu, Tetsuo; Suzuki, Akinori; and Toda, Kazuya, 4,453,975, Cl. 71-118.000.

Suzuki, Fuminori; Yoshida, Makoto; and Morokawa, Shigeru, to Citizen Watch Company Limited. Electronic timepiece with temperature compensation. 4,453,834, Cl. 368-201.000.

Suzuki, Hirosuke; Mizukami, Chiaki; and Sato, Yoshiaki, to Junkosha Co., Ltd. Reinforced plastics with porous resin fragments. 4,454,249, Cl. 521-54.000.

Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Change-over position display device for use in a switch. 4,454,399, Cl. 200-314.000.

Suzuki, Nagayuki, to Sugawara Industrial Co. Pressure sensitive adhesive tape. 4,454,192, Cl. 428-294.000.

Suzuki, Ryoichi; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Auto-focus device for camera. 4,453,812, Cl. 354-403.000.

Suzuki, Sakaru: *See*—
Noyori, Ryoji; Suzuki, Sakaru; Okayama, Minoru; Sakurai, Katukiyo; Kamohara, Shigeyoshi; and Ueno, Yoshio, 4,454,123, Cl. 424-180.000.

Suzuki, Shigeru, to Ricoh Company, Ltd. Electrostatographic apparatus. 4,453,820, Cl. 355-3.0TR.

Suzuki, Shinichi, to Shinwa Ltd. Oil filter. 4,454,036, Cl. 210-117.000.

Suzuki, Takeshi: *See*—
Yamatsu, Isao; Inai, Yuichi; Suzuki, Takeshi; Abe, Shinya; Satoh, Masaru; and Seto, Naosuke, 4,454,126, Cl. 424-212.000.

Suzuki, Yoshiharu: *See*—
Miyamoto, Masakatsu; Suzuki, Yoshiharu; Ojima, Masayoshi; Iizuka, Yutaka; Orita, Ryuzo; and Matsuo, Tadashi, 4,453,945, Cl. 8-543.000.

Svenska Mejeriernas Riksforenings Ekonomi AB: *See*—
Jonsson, Hans; Pettersson, Hans-Erik; and Andersson, Kennerth, 4,454,160, Cl. 426-34.000.

Svinarenko, Nikolai M.: *See*—
Ivanov, Anatoly I.; Lokh, Igor A.; Pliskanovsky, Stanislav T.; Novikov, Boris G.; Fomin, Vitaly B.; Svinarenko, Nikolai M.; Krasavtsev, Igor N.; Nesterenko, Tikhon T.; Archikov, Alexandr D.; Demidovich, Evgeny A.; Lukyanchenko, Leonid F.; Pryadko, Nikolai D.; Smerechinsky, Sergei G.; and Oleinik, Jury V., 4,453,703, Cl. 266-157.000.

Swallow, Douglas L., to Imperial Chemical Industries PLC. Antiviral tetracyclononane derivatives, processes for their manufacture and pharmaceutical compositions containing them. 4,454,157, Cl. 424-325.000.

Swanson, John E., to United Technologies Corporation. Seal means. 4,453,722, Cl. 277-89.000.

Swanson, Rollan. Process for recovering hydrocarbon and other values from shale oil rock. 4,454,017, Cl. 208-11.00R.

Sweere, Harry C. Swivel/tilt mounting device for a cathode ray tube. 4,453,687, Cl. 248-183.000.

Swift, David E.: *See*—
Maurer, Donald D.; Swift, David E.; and Ioffe, Zosim, 4,453,548, Cl. 128-421.000.

Swift, Harold E.: *See*—
Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., 4,454,366, Cl. 585-525.000.

Sykes, Brenda M.: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; and Terry, Roger S., 4,453,276, Cl. 2-195.000.

Symmons Industries, Inc.: *See*—
Symmons, Paul C., 4,453,569, Cl. 137-879.000.

Symmons, Paul C., to Symmons Industries, Inc. Check valve with inspection means. 4,453,569, Cl. 137-879.000.

Syntex (U.S.A.) Inc.: *See*—
Muchowski, Joseph M.; and Greenhouse, Robert, 4,454,326, Cl. 548-453.000.
Waterbury, L. David, 4,454,151, Cl. 424-274.000.

Systems Engineering & Manufacturing Corp.: *See*—
Fishman, Herbert; and Rogers, Alvin J., 4,454,003, Cl. 156-640.000.

Sziklai, George C., to Transaction Sciences Corporation. Methods and apparatus for the automatic classification of patterns. 4,454,610, Cl. 382-3.000.

Szkudlarek, Warren E. Supplemental ventilating device for an air conditioning window unit. 4,453,456, Cl. 98-88.005.

T & N Research Materials Ltd.: *See*—
Hobson, Barry C.; and Woodthorpe, John, 4,454,238, Cl. 501-38.000.

T.P. System S.a.s. di Pittaluga Giuseppe & C.: *See*—
Pittaluga, Pietro, 4,454,053, Cl. 252-71.000.

Taboada, John, to United States of America, Air Force. Optical distortion analyzer system. 4,453,827, Cl. 356-353.000.

Tada, Tsukasa; and Miura, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Process for forming resist patterns using mixed ketone developers. 4,454,222, Cl. 430-326.000.

Tagaya, Nobuaki: *See*—
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,454,367, Cl. 585-533.000.

Taglieber, Volker: *See*—
Kummer, Rudolf; Taglieber, Volker; and Schneider, Heinz-Walter, 4,454,358, Cl. 568-885.000.

Taguchi, Satoshi: *See*—
Inoue, Yasuhiko; Nishizaki, Tadao; and Taguchi, Satoshi, 4,454,357, Cl. 568-804.000.

Taguchi, Takeo, to Tomi Machinery Manufacturing Co., Ltd. Variable-type bubble water cooling apparatus. 4,453,907, Cl. 425-326.100.

Taguchi, Yasuo: *See*—
Nakao, Satoshi; and Taguchi, Yasuo, 4,454,560, Cl. 361-257.000.

Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Sasamoto, Hisaya; Yamashita, Seiji; and Takahashi, Noriyoshi, to Hitachi, Ltd. D.C. Rotary machine with interpole compensation. 4,454,460, Cl. 318-491.000.

Tai, King L.: *See*—
Chen, Cheng-Hsuan; Ong, Edith C.; Phillips, James C.; and Tai, King L., 4,454,221, Cl. 430-316.000.

Takagi, Yoshiaki; and Kai, Yoshinori, to Nisshin Oil Mills, Ltd., The. Process for preparation of tocopherol concentrates. 4,454,329, Cl. 549-413.000.

Takahara, Yoshimasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,454,330, Cl. 549-420.000.

Takahashi, Kihei, to Yoshida Kogyo K. K. Method and apparatus for attaching reinforcing material to slide fastener chain. 4,453,990, Cl. 156-66.000.

Takahashi, Noriyoshi: *See*—
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Sasamoto, Hisaya; Yamashita, Seiji; and Takahashi, Noriyoshi, 4,454,460, Cl. 318-491.000.

Takahashi, Susumu; Kato, Yasuo; Oana, Yoshinori; and Hatano, Yoshiyuki, to Tokyo Kogaku Kikai Kabushiki Kaisha. Apparatus for detecting the position of a patient's eye in ophthalmologic instruments. 4,453,808, Cl. 351-208.000.

Takaoka, Michio; Ono, Motoyuki; and Kaji, Isao, to Fujikura Cable Works, Limited, The. Power cable joint structure having sheath isolation member containing electrode spheres. 4,454,375, Cl. 174-73.00R.

Takara Shuzo Co., Ltd.: *See*—
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.

Takasu, Yasuhito; Inoue, Shingo; and Iwata, Toshiharu, to Nippondenso Co., Ltd. Method and apparatus for controlling ignition timing in a multicylinder internal combustion engine. 4,453,521, Cl. 123-419.000.

Takasu, Yoshio; and Ishikawa, Shozo, to Canon Kabushiki Kaisha; and Copyer Kabushiki Kaisha. Electrophotographic photosensitive member with pyrazoline charge transport material. 4,454,211, Cl. 430-59.000.

Takasumi, Masakazu: *See*—
Sato, Kazuo; Takasumi, Masakazu; Shiohata, Kouki; Ohmori, Motoji; Shiga, Motohiro; and Fujisawa, Fumio, 4,453,407, Cl. 73-462.000.

Takatsu, Suehiro. Hemming apparatus. 4,453,396, Cl. 72-387.000.

Takaya, Katsuhiko: *See*—
Ikegami, Tadashi; and Takaya, Katsuhiko, 4,454,242, Cl. 502-113.000.

Takeda Chemical Industries, Ltd.: *See*—
Fujinami, Kimiya; Minato, Ichiro; and Shibata, Koichi, 4,454,296, Cl. 528-75.000.
Sasaki, Takuma; and Sugino, Yukio, 4,454,315, Cl. 536-18.200.

Takeda, Koichi; Ikeda, Sadao; and Matsubara, Koichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Shell of a universal-joint and a manufacturing method therefor. 4,453,395, Cl. 72-370.000.

Takematsu, Tetsuo; Suzuki, Akinori; and Toda, Kazuya, to Yashima Chemical Industrial Co., Ltd. Herbicidal composition. 4,453,975, Cl. 71-118.000.

Takeshita, Saburou, to Micron Co., Ltd. Dental scaler. 4,453,919, Cl. 433-120.000.

Takeuchi, Kunio: *See*—
Kuze, Katsuaki; Hashimoto, Hiroshi; Ohta, Takeshi; Akaishi, Tsukasa; Takeuchi, Kunio; and Kamatani, Hirovoshi, 4,454,312, Cl. 528-275.000.

Takeuji, Koichi, to Sharp Kabushiki Kaisha. Mounting assembly for cooking appliances. 4,453,690, Cl. 248-309.100.

Tamamushi, Takashige: *See*—
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Tamamushi, Takashige, 4,454,526, Cl. 357-30.000.

Tamborski, Christ; Snyder, Carl E., Jr.; and Christian, John B., to United States of America, Air Force. Perfluoroalkylether substituted phenyl phosphines. 4,454,349, Cl. 568-13.000.

Tamura, Naoyuki: *See*—
Tanaka, Ryuichi; Sunaga, Hiromi; Tamura, Naoyuki; and Murakami, Toshio, 4,454,421, Cl. 250-336.100.

Tamura, Sadaitsu: *See*—
Murata, Takeo; Tamura, Sadaitsu; and Mori, Kozo, 4,453,738, Cl. 280-725.000.

Tanabe, Osamu: *See*—
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.

Tanabe, Syoji: *See*—
Yamashita, Seizi; Miyashita, Kunio; Tanabe, Syoji; and Shimotsu, Tadao, 4,454,438, Cl. 310-162.000.

Tanaka, Hideyuki: *See*—
Okimura, Hirotake; and Tanaka, Hideyuki, 4,453,978, Cl. 106-88.000.

Tanaka, Hisao: *See*—
Izumi, Takayuki; Naito, Tsutomu; Nakamura, Tomoo; and Tanaka, Hisao, 4,454,019, Cl. 208-22.000.

Tanaka, Masaaki; Yamauchi, Shiro; and Nakayama, Shigeki, to Mitsubishi Denki Kabushiki Kaisha. Intermittent ozone feeding apparatus. 4,453,953, Cl. 55-163.000.

Tanaka, Ryuichi; Sunaga, Hiromi; Tamura, Naoyuki; and Murakami, Toshio, to Japan Atomic Energy Research Institute. Apparatus for measuring radiation dose. 4,454,421, Cl. 250-336.100.

Tanaka, Shigetoshi: *See*—
Hayashi, Motoshige; Tanaka, Shigetoshi; Yoshii, Motokazu; and Doi, Tsuneo, 4,454,087, Cl. 264-53.000.

Tanaka, Takeshi: *See*—
Kanazawa, Hirotaka; Tanaka, Takeshi; Abe, Michio; and Maeda, Naoyuki, 4,453,615, Cl. 180-142.000.

Tanaka, Toshinori; and Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Stator frame and housing for venticular starting motor with reduction gears. 4,454,437, Cl. 310-83.000.

Tanaka, Yasushi: *See*—
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,453,724, Cl. 280-5.00A.

Tanaka, Yoshiharu: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.

Taniguchi, Toshihiko, to West Electric Company, Ltd. Piezoelectric driving apparatus. 4,454,441, Cl. 310-328.000.

Taniguchi, Tsutomu: *See*—
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.

Tate Architectural Products, Inc.: *See*—
Gladden, Robert S., 4,453,365, Cl. 52-716.000.

Taylor, Donald L.: *See*—
Heinzer, Hans E.; and Taylor, Donald L., 4,453,635, Cl. 206-408.000.

Taylor, James E.: *See*—
Dahlgren, Harold P.; Taylor, James E.; and Gardiner, John W., 4,453,463, Cl. 101-148.000.

Taylor, Mark P., to Corning Glass Works. Direct preparation of slurries for ceramic board. 4,453,981, Cl. 106-291.000.

TDK Corporation: *See*—
Izumi, Jun; Tsutaya, Hiroyuki; Amitani, Tatsuo; Kubo, Masayoshi; and Maehara, Kenichi, 4,453,952, Cl. 55-68.000.

TDK Electronics Co., Ltd.: *See*—
Fukuda, Kazumasa; and Kitahara, Yoshimi, 4,454,195, Cl. 428-336.000.

Teach, Eugene G., to Stauffer Chemical Company. 3-Perhaloalkylhydroxy-oxazolidines and thiazolidines herbicidal antidotes. 4,453,968, Cl. 71-90.000.

Technical Materials, Inc.: *See*—
Russell, Robert J., II, 4,453,662, Cl. 228-56.000.

Technion Research and Development Foundation, Ltd.: *See*—
Cais, Michael; and Shimoni, Moshe, 4,454,231, Cl. 436-500.000.

Teich, Wesley W.; and Dudley, Kenneth W., to Raytheon Company. Microwave heating method and apparatus. 4,454,403, Cl. 219-10.55E.

Teijin Limited: *See*—
Iohara, Kohichi; and Matsui, Michikage, 4,454,196, Cl. 428-359.000.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Ferrieu, Gilbert M. M.; Hetet, Yves J. F.; and Balch, Jacques Y., 4,454,384, Cl. 179-81.00B.

Teledyne Walterboro, a Division of Teledyne Industries, Inc.: *See*—
Greene, William J., 4,454,465, Cl. 322-49.000.

TELETTRA - Telefonia Elettronica e Radio S.p.A.: *See*—
Donazzan, Amedeo; and Pome, Enzo, 4,454,489, Cl. 333-227.000.

Tempel, Christel: *See*—
Wurmli, Albert; and Tempel, Christel, 4,453,744, Cl. 346-216.000.

Teng, Harry H.; Huang, I-Der; and Labowsky, Hsuan L., to Exxon Research & Engineering Co. Process for preparing inorganic metal oxygen composition capable of dehydrocoupling toluene. 4,454,363, Cl. 585-428.000.

Tennessee Valley Authority: *See*—
Garrison, Forrest C.; and Wells, William L., 4,454,101, Cl. 423-242.000.

Terachi, Junichi: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,454,395, Cl. 200-147.00R.

Terlizzi, Donald: *See*—
Terlizzi, Nicholas, Jr.; and Terlizzi, Donald, 4,453,996, Cl. 156-227.000.

Terlizzi, Nicholas, Jr.; and Terlizzi, Donald, to Ballet Makers, Inc. Process of making a ballet toe shoe. 4,453,996, Cl. 156-227.000.

Terry, Roger S.: *See*—
Smith, Rory J. M.; Sykes, Brenda M.; and Terry, Roger S., 4,453,276, Cl. 2-195.000.

Terumo Corporation: *See*—
Aoyagi, Juuro; and Ichikawa, Toshizi, 4,453,940, Cl. 604-408.000.
Testa-Laboratorium A/S: *See*—
Kohnke, Ole B.; and Ruben, Henning, 4,453,543, Cl. 128-203.280.
Texaco Inc.: *See*—
Haag, James W., 4,453,756, Cl. 294-86.290.
Naylor, Carter G., 4,454,074, Cl. 260-503.000.
Smith, Harry D., Jr., 4,454,420, Cl. 250-270.000.
Waddill, Harold G.; and Zimmerman, Robert L., 4,454,297, Cl. 528-111.000.
Texas Instruments Incorporated: *See*—
Lou, Perry W., 4,454,591, Cl. 364-900.000.
Thackray, Philip C., to Laser Drive, Inc. Low intra-winding capacitance multiple layer transformer winding. 4,454,492, Cl. 336-69.000.
Thermetic Glass, Inc.: *See*—
Richter, David J.; and Miller, Clarence W., 4,453,855, Cl. 403-295.000.
Thiem, Heinz H.: *See*—
Schumacher, Heinz O.; and Thiem, Heinz H., 4,453,832, Cl. 366-167.000.
Thigpen, James L. Signal shank parallel ripper apparatus. 4,453,600, Cl. 172-250.000.
Thomasson, William R., to Coles Cranes Limited. Cranes. 4,453,643, Cl. 212-184.000.
Thompson, Charles E., to Huyck Corporation. Papermakers forming fabric. 4,453,573, Cl. 139-383.00A.
Thompson, Clifford F., to Cliffside Pipelayers, *A* Division of Banister Continental Ltd. Leak detector. 4,453,399, Cl. 73-40.50R.
Thomson-CSF: *See*—
Darmouni, Corinne, 4,454,487, Cl. 333-28.00R.
Thorn, Mark A.: *See*—
Richman, Edward; and Thorn, Mark A., 4,454,055, Cl. 252-194.000.
Thune-Eureka S/S: *See*—
Barthel, Sven; and Eriksen, Gunnar, 4,453,593, Cl. 165-89.000.
Thuries, Edmond; Mahl, Maurice; Masson, Jean-Paul; and Malik, Louis, to Societe Anonyme dite: Alsthom-Atlantique. Apparatus for winding and unwinding a flexible rod. 4,453,679, Cl. 242-54.00A.
Ting, Chihyuan C.; Tomkins, David F.; and Rueppel, Melvin L., to Monsanto Company. Column switching procedure. 4,454,043, Cl. 210-659.000.
Ting, Raymond M. L. Corrugated steel decking section. 4,453,364, Cl. 52-630.000.
Titchenal, Oliver R., to Basic Packaging Systems, Inc. Square ended bag. 4,453,370, Cl. 53-455.000.
TMC Corporation: *See*—
Krob, Erwin, 4,453,731, Cl. 280-605.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Izumi, Takayuki; Naito, Tsutomu; Nakamura, Tomoo; and Tanaka, Hisao, 4,454,019, Cl. 208-22.000.
Izumi, Takayuki; Naito, Tsutomu; and Igarashi, Seikoh, 4,454,020, Cl. 208-22.000.
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,454,367, Cl. 585-533.000.
Toda, Kazuya: *See*—
Takematsu, Tetsuo; Suzuki, Akisori; and Toda, Kazuya, 4,453,975, Cl. 71-118.000.
Todd, John H. Saxophone valve key. 4,453,445, Cl. 84-385.000.
Toffolon, Roger L. Pavement breaking apparatus. 4,453,773, Cl. 299-37.000.
Tofield, Bruce C.: *See*—
Williams, David E.; Tofield, Bruce C.; and McGeehin, Peter, 4,454,494, Cl. 338-34.000.
Tokai Electric Wire Company Limited: *See*—
Inoue, Nori, 4,453,799, Cl. 339-256.0SP.
Tokai TRW & Co., Ltd.: *See*—
Kanazawa, Hirotaka; Tanaka, Takeshi; Abe, Michio; and Maeda, Naoyuki, 4,453,615, Cl. 180-142.000.
Tokuda, Ryuji: *See*—
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,453,812, Cl. 354-403.000.
Tokuno, Masateru, to Rengo Co., Ltd. Die cutter and process for die cutting. 4,453,436, Cl. 83-76.000.
Tokyo Electric Co., Ltd.: *See*—
Archer, James L.; Hampson, Richard A.; Matsuda, Susumu; and Yagi, Takashi, 4,453,842, Cl. 400-605.000.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Takahashi, Susumu; Kato, Yasuo; Oana, Yoshinori; and Hatano, Yoshiyuki, 4,453,808, Cl. 351-208.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Itoh, Kiyohiko; Mikuni, Yoshihiko; and Sugita, Kensei, 4,454,514, Cl. 343-700.0MS.
Kagaya, Koji, 4,454,517, Cl. 346-136.000.
Kobayashi, Akio; Yanabu, Satoru; and Yamashita, Shoji, 4,454,476, Cl. 324-424.000.
Nakao, Satoshi; and Taguchi, Yasuo, 4,454,560, Cl. 361-257.000.
Sugawara, Toru, 4,454,453, Cl. 315-106.000.
Tada, Tsukasa; and Miura, Akira, 4,454,222, Cl. 430-326.000.
Toyoda, Mitsuru, 4,454,394, Cl. 200-145.000.
Tsuchiya, Yuzo, 4,454,599, Cl. 369-77.200.
Zushi, Sadao, 4,454,404, Cl. 219-10.55B.
Tolonen, William J., to Phillips Petroleum Company. Solar energy structure. 4,453,535, Cl. 126-444.000.
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L. Apparatus for abrasive machining of workpieces. 4,453,348, Cl. 51-109.00R.
Tomi Machinery Manufacturing Co., Ltd.: *See*—
Taguchi, Takeo, 4,453,907, Cl. 425-326.100.
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Morpholino and oxazoline substituted carbostyril derivatives, process for producing the same and cardiotonic compositions containing the same. 4,454,130, Cl. 424-248.400.
Tomkins, David F.: *See*—
Ting, Chihyuan C.; Tomkins, David F.; and Rueppel, Melvin L., 4,454,043, Cl. 210-659.000.
Tomlin, Jerry B.: *See*—
Henderson, Herman O., Jr.; LeMoine, Joseph L.; and Tomlin, Jerry B., 4,453,566, Cl. 137-614.020.
Tomlinson, Walter J., III: *See*—
Ashkin, Arthur; Smith, Peter W.; and Tomlinson, Walter J., III, 4,453,805, Cl. 350-162.240.
Tomy Kogyo Co., Inc.: *See*—
Kozuka, Michihiro; and Tonokura, Masayuki, 4,453,340, Cl. 446-437.000.
Tonaevsky, Ernst L.: *See*—
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Pyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.
Tonokura, Masayuki: *See*—
Kozuka, Michihiro; and Tonokura, Masayuki, 4,453,340, Cl. 446-437.000.
Topline Products, Inc.: *See*—
Palkovics, William J., 4,453,562, Cl. 137-382.000.
Toppan Printing Co., Ltd.: *See*—
Shimura, Kisaburo; Utsuda, Tetsuji; Suda, Hironobu; and Kobayashi, Koji, 4,454,536, Cl. 358-76.000.
Toray Industries, Inc.: *See*—
Fukata, Shunsuke, 4,454,189, Cl. 428-224.000.
Toray Silicone Company, Ltd.: *See*—
Fukayama, Miyoji; and Ishida, Tadao, 4,454,262, Cl. 523-210.000.
Torii & Co., Ltd.: *See*—
Fujii, Setsuro; Okutome, Toshiyuki; Nakayama, Toyoo; Yaegashi, Takashi; and Kurumi, Masateru, 4,454,338, Cl. 560-34.000.
Toriumi, Hiroshi, to Pioneer Electronic Corporation. Data communication in CATV system. 4,454,538, Cl. 358-86.000.
Torpey, William A., to Eastman Kodak Company. Web guiding apparatus. 4,453,659, Cl. 226-20.000.
Torras, Robert M., to Kut-Kwick Corporation. Tractor or other moving vehicle with limited angle of attack on slopes. 4,453,739, Cl. 280-755.000.
Tortorello, Anthony J.; and Roberts, Donald R., to DeSoto, Inc. Aqueous epoxy-phenolic coatings. 4,454,265, Cl. 523-420.000.
Toschi Produktions-GmbH: *See*—
Faatz, Otto, 4,454,100, Cl. 423-210.000.
Toshio, Takano, to Fuji Jukogyo Kabushiki Kaisha. Automatic transmission with overdrive device. 4,453,429, Cl. 74-688.000.
Town, Michael-Harold: *See*—
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Kuze, Katsuaki; Hashimoto, Hiroshi; Ohta, Takeshi; Akaishi, Tsukasa; Takeuchi, Kunio; and Kamatani, Hirovoshi, 4,454,312, Cl. 528-275.000.
Toyo Kogyo Co., Ltd.: *See*—
Kanazawa, Hirotaka; Tanaka, Takeshi; Abe, Michio; and Maeda, Naoyuki, 4,453,615, Cl. 180-142.000.
Toyoda, Mitsuru, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit breaker having a parallel resistor. 4,454,394, Cl. 200-145.000.
Toyoda, Yukio: *See*—
Watanabe, Yoji; Morimura, Toshio; and Toyoda, Yukio, 4,454,021, Cl. 208-48.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Murata, Takeo; Tamura, Sadaitsu; and Mori, Kozo, 4,453,738, Cl. 280-725.000.
Otsuki, Hiromi; Maruchi, Yoshiki; Kawai, Yukio; and Ogawa, Toshihisa, 4,453,700, Cl. 251-129.000.
Saji, Hideo; Yamauchi, Yasutaka; and Kobashi, Mamoru, 4,453,515, Cl. 123-339.000.
Takeda, Koichi; Ikeda, Sadao; and Matsubara, Koichi, 4,453,395, Cl. 72-370.000.
Ueda, Masahiro; Noba, Masahiko; Hori, Osamu; Murata, Kimitoshi; and Nakao, Hatsuo, 4,453,506, Cl. 123-179.00G.
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,453,724, Cl. 280-5.00A.
Toyota Jidosha Kogyo Kabushikikaisha: *See*—
Kuwana, Kazutaka; Ueda, Masahiro; and Nonoyama, Seiji, 4,453,725, Cl. 280-6.00R.
Tozaki, Katutosi: *See*—
Oosaka, Shigenori; and Tozaki, Katutosi, 4,454,519, Cl. 346-140.00R.
Transaction Sciences Corporation: *See*—
Sziklai, George C., 4,454,610, Cl. 382-3.000.
Tregubenko, Mikhail F.: *See*—
Osipov, Anatoly A.; Pomazkov, Vladimir V.; Pekov, Nikolai S.; Dubovik, Anatoly S.; Tregubenko, Mikhail F.; Shvorobei, Jury

L.; Dashevsky, Grigory I.; and Iovlev, Vladimir A., 4,453,916, Cl. 432-197.000.

Tribotech: *See*—
Cain, Earl S.; and Carlson, Jerome A., 4,453,853, Cl. 403-28.000.

Trihawk, Inc.: *See*—
Richards, Louis R., 4,453,763, Cl. 296-185.000.

Trimos S.A.: *See*—
Marveggio, Secondo, 4,453,316, Cl. 33-199.00R.

Trop, Harvey S., to AT & T Bell Laboratories. Palladium plating procedure. 4,454,010, Cl. 204-47.000.

Trueblood, Raymond L.: *See*—
Kleykamp, Donald L.; McCord, Steven G.; LiVolsi, William J.; and Trueblood, Raymond L., 4,453,289, Cl. 24-20.0TT.

Trueblood, Richard K., to Zilog, Inc. Low resistance backside preparation for semiconductor integrated circuit chips. 4,454,528, Cl. 357-40.000.

Trummlitz, Gunter: *See*—
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.

TRW Inc.: *See*—
Brookbank, Earl B., III, 4,453,892, Cl. 417-279.000.

Tsai, Tom C. H., to Copolymer Rubber & Chemical Corp. Method and material for producing high green strength rubber compounds. 4,454,304, Cl. 525-210.000.

TSH-Handels AG: *See*—
Ziegler, Gerd W., 4,453,726, Cl. 280-11.200.

Tsuchiya, Ryuichi, to Alps Electric Co., Ltd. Light emission delay circuit. 4,454,475, Cl. 324-392.000.

Tsuchiya, Yuzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for reproducing signals from a disc. 4,454,599, Cl. 369-77.200.

Tsuji, Nobuo: *See*—
Komine, Shigeo; Morita, Kazuhiko; and Tsuji, Nobuo, 4,454,202, Cl. 428-423.100.

Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Photometric device for single-lens reflex camera. 4,453,813, Cl. 354-480.000.

Tsutaya, Hiroyuki: *See*—
Izumi, Jun; Tsutaya, Hiroyuki; Amitani, Tatsuo; Kubo, Masayoshi; and Maehara, Kenichi, 4,453,952, Cl. 55-68.000.

Tuominen, Francis W., to Henkel Corporation. Sunscreen composition containing tocopherol acetylsalicylate. 4,454,112, Cl. 424-60.000.

Turek, Stanley P.: *See*—
Spencer, Fredric J.; and Turek, Stanley P., 4,453,529, Cl. 126-9.00R.

Turowski, Peter, to Kernforschungszentrum Karlsruhe GmbH. Stabilized multifilament superconductor made of brittle, prereacted Nb_3Sn filaments in a bronze matrix. 4,454,380, Cl. 174-128.00S.

Tuttle, Ronald R., to Key Pharmaceuticals, Inc. Hyperkinetic child treatment agent. 4,454,142, Cl. 424-260.000.

Tvedt, Thorwald J., Jr.: *See*—
Wallace, Steven L.; Griffin, Freddie, Jr.; and Tvedt, Thorwald J., Jr., 4,454,046, Cl. 210-698.000.

Twigger, Alan R. Scissors with thumb retainer. 4,453,311, Cl. 30-254.000.

Tyndale Plains-Hunter, Ltd.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,454,309, Cl. 525-454.000.

Tyszkiewicz, Theodore J.: *See*—
Boden, Richard M.; Vock, Manfred H.; and Tyszkiewicz, Theodore J., 4,454,111, Cl. 424-58.000.

U.C. Industries: *See*—
Cisar, James R.; and Grauzer, Attila, 4,454,082, Cl. 264-40.100.

Ube Industries, Ltd.: *See*—
Hirota, Yojiro; Shinhama, Koichi; Sato, Katsumi; and Wada, Takuo, 4,454,131, Cl. 424-248.510.

Ubukata, Susumu; Mizutani, Yasukazu; and Iyoda, Syozo, to Susumu Ubukata. Hermetical type thermally responsive switch. 4,454,493, Cl. 337-368.000.

Uchida, Hiroyuki: *See*—
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Shiomi, Tomoko; Taniguchi, Tsutomu; Obayashi, Akira; Tanabe, Osamu; and Sasaki, Takuma, 4,454,289, Cl. 536-1.100.

Uchida, Mitsuhiro: *See*—
Okamoto, Kouichi; Uchida, Mitsuhiro; and Nomura, Tatsuei, 4,454,439, Cl. 310-179.000.

UCO Optics, Inc.: *See*—
Wittmann, Joseph W.; and Evans, John M., 4,454,295, Cl. 527-311.000.

Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, to Kanegafuchi Chkagaku Kogyo Kabushiki Kaisha. Polyamide acid composition for preparing polyimide and process for preparing polyimide from the same. 4,454,276, Cl. 524-209.000.

Ueda, Kayako: *See*—
Sakurada, Satoshi; Hashimoto, Takao; Tagaya, Nobuaki; Maeshima, Tsugio; Ueda, Kayako; and Kokubo, Masahiro, 4,454,367, Cl. 585-533.000.

Ueda, Masahiro; Noba, Masahiko; Hori, Osamu; Murata, Kimitoshi; and Nakao, Hatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic engine stop and start system. 4,453,506, Cl. 123-179.00G.

Ueda, Masahiro: *See*—
Kuwana, Kazutaka; Ueda, Masahiro; and Nonoyama, Seiji, 4,453,725, Cl. 280-6.00R.

Ueno, Katsuji; Maruyama, Takashi; and Hayatsu, Kazuo, to Sumitomo Chemical Company, Limited. Resin compositions containing polyphenylene oxide and olefin-glycidyl (meth)acrylate copolymer. 4,454,284, Cl. 524-427.000.

Ueno, Yoshio: *See*—
Noyori, Ryoji; Suzuki, Sakaru; Okayama, Minoru; Sakurai, Katukiyo; Kamohara, Shigeyoshi; and Ueno, Yoshio, 4,454,123, Cl. 424-180.000.

Uhde GmbH: *See*—
Krux, Peter, 4,453,693, Cl. 248-559.000.

Uhlig, Uwe: *See*—
Redeker, Werner; and Uhlig, Uwe, 4,453,347, Cl. 51-108.00R.

Ulicny, Thomas A.: *See*—
Mokhbery, Javad M.; and Ulicny, Thomas A., 4,453,606, Cl. 177-126.000.

Ulman, Katherine L.: *See*—
Lee, Kenneth M.; and Ulman, Katherine L., 4,454,288, Cl. 524-588.000.

Umano, Yasuhiro, to Kabushiki Kaisha Komatsu Seisakusho. Load monitoring system for a press. 4,453,421, Cl. 73-862.540.

Union Carbide Corporation: *See*—
Durden, John A., Jr., 4,454,134, Cl. 424-244.000.
Heitz, William D.; Ealer, George E.; and Cieloszyk, Gary S., 4,454,281, Cl. 524-399.000.
Jacques, Albert M. V., 4,454,345, Cl. 562-410.000.
Litz, Lawrence M., 4,454,077, Cl. 261-91.000.
Osmialowski, Victor R., 4,454,208, Cl. 429-163.000.
Pahade, Ravindra F.; Ziemer, John H.; and Cheung, Harry, 4,453,957, Cl. 62-25.000.

Union Oil Company of California: *See*—
Block, Michael J., 4,454,193, Cl. 428-322.700.
Fenton, Donald M., 4,454,027, Cl. 208-253.000.
Robinson, Paul R.; and Moorehead, Eric L., 4,454,245, Cl. 502-209.000.

Uniroyal, Inc.: *See*—
Dietrich, Robert F.; and Gay, Walter A., 4,454,362, Cl. 568-938.000.

United Aircraft Products, Inc.: *See*—
Mort, Charles B.; and DeSalve, Dennis W., 4,453,301, Cl. 29-157.30C.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Brint, Norman T.; and Comley, Jack W., 4,453,329, Cl. 42-15.000.
Fitzgerald-Smith, James P.; and Willis, Michael, 4,453,283, Cl. 14-73.000.
Janes, Timothy W.; and White, John C., 4,453,305, Cl. 29-571.000.

United States Gypsum Company: *See*—
Powell, David W.; and Hodges, James W., 4,453,346, Cl. 49-404.000.
Williams, Terrance L., 4,454,267, Cl. 524-43.000.

U.S. Metal Works, Inc.: *See*—
Hite, W. Lee; and Bright, Gary C., 4,453,491, Cl. 118-425.000.

United States of America
Agriculture: *See*—
Otey, Felix H.; and Westhoff, Richard P., 4,454,268, Cl. 524-47.000.
Air Force: *See*—
Belt, Ronald A.; and Couturier, Guy D., 4,454,590, Cl. 364-724.000.
Evans, David W., 4,453,804, Cl. 350-162.120.
Folino, Frank A., 4,454,371, Cl. 136-246.000.
Gowan, John G., 4,453,587, Cl. 164-46.000.
Huniu, Sam; and Bailey, William C., 4,453,914, Cl. 431-121.000.
Miller, Daniel G., 4,454,430, Cl. 307-265.000.
Miller, Gary L, 4,454,589, Cl. 364-716.000.
Morrisey, Edward J., 4,453,995, Cl. 156-172.000.
Russell, John W., 4,454,513, Cl. 343-18.00E.
Sidey, Roger, 4,453,401, Cl. 73-73.000.
Taboada, John, 4,453,827, Cl. 356-353.000.
Tamborski, Christ; Snyder, Carl E., Jr.; and Christian, John B., 4,454,349, Cl. 568-13.000.
Wick, Raymond V., 4,453,806, Cl. 350-431.000.
Army: *See*—
Cranford, H. Bruce, Jr.; Geasey, L. Thomas; and Arnold, Mark F., 4,453,768, Cl. 297-440.000.
Durand, Philip E.; and McManus, Lawrence R., 4,453,277, Cl. 2-416.000.
Fisher, Eldon M., 4,454,485, Cl. 331-109.000.
Katz, Norman N. K.; and Przybyla, Vincent A., Jr., 4,453,546, Cl. 128-303.00R.
Lukaszek, Theodore J.; and Ballato, Arthur, 4,454,443, Cl. 310-348.000.
Pohlmann, Juergen L. W., 4,454,008, Cl. 204-15.000.
Energy: *See*—
Fasching, George E., 4,453,948, Cl. 48-76.000.
Fasching, George E.; and Rotunda, John R., 4,453,949, Cl. 48-77.000.
Fasching, George E., 4,453,950, Cl. 48-86.00R.
Fraioli, Anthony V.; and Young, John E., 4,454,207, Cl. 429-17.000.
Fulton, Fred J.; Honodel, Charles A.; Holman, William R.; and Weingart, Richard C., 4,453,423, Cl. 73-863.000.
Strauss, Michael G.; and Brenner, Raul, 4,454,424, Cl. 250-390.000.
Werner, Thomas R.; Falco, Charles M.; and Schuller, Ivan K., 4,454,495, Cl. 338-195.000.
Interior: *See*—
Patton, Keith M.; and Senftle, Frank E., 4,453,594, Cl. 166-248.000.

Navy: *See*—
Groutage, Frederick D.; Conjerti, Samuel N.; and Shaw, Lockburn S., 4,453,426, Cl. 74-2.000.
Kelly, John R., 4,453,754, Cl. 294-15.000.
Sullivan, Edmund J., 4,454,597, Cl. 367-12.000.

U.S. Philips Corporation: *See*—
Achtermann, Bernhard; Kutscher, Hans L.; and Lankes, Hans, 4,454,469, Cl. 324-61.00P.
Heffron, Charles B.; Lenarduzzi, Roberto; and Haken, Jack E., 4,454,594, Cl. 364-900.000.
Huddart, David, 4,454,558, Cl. 361-153.000.
Mateika, Dieter; and Laurien, Rolf, 4,454,206, Cl. 428-692.000.
Watkinson, Stephen W., 4,454,484, Cl. 331-17.000.

United States Steel Corporation: *See*—
Aiken, John E.; Fields, Marvin C.; and Stickel, Robert M., 4,454,348, Cl. 564-435.000.
Finke, Harry P.; and Shannon, Robert A., 4,453,915, Cl. 432-11.000.

United Technologies Corporation: *See*—
Cullen, Donald E., 4,454,440, Cl. 310-313.00R.
Davis, Joseph; and White, Richard T., 4,453,783, Cl. 308-184.00R.
Hovan, Edward J.; and Neumayer, Richard R., 4,453,888, Cl. 416-97.00R.
Kudea, Robert J.; Alcorta, Jorge A.; and Richardson, Robert B., 4,453,784, Cl. 308-187.000.
Swanson, John E., 4,453,722, Cl. 277-89.000.

United Telecommunications, Inc.: *See*—
Fahey, Robert J.; and Resnick, Martin L., 4,454,502, Cl. 340-507.000.

University of California, The Regents of the: *See*—
Stofko, Jan; and Zavarin, Eugene, 4,454,005, Cl. 162-12.000.

University of Florida: *See*—
Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., 4,453,947, Cl. 44-51.000.

University of Illinois, The Board of Trustees of the: *See*—
Barenberg, Ernest J., 4,453,360, Cl. 52-396.000.

University of Pennsylvania, Trustees of the: *See*—
Zemel, Jay N., 4,453,405, Cl. 73-204.000.

University of Tennessee Research Corporation, The: *See*—
Beachey, Edwin H., 4,454,121, Cl. 424-177.000.

University of Toledo, The: *See*—
Raftopoulos, Demetrios D.; Baril, James D.; and Reimer, Glenn, 4,453,539, Cl. 128-92.0BC.

Upjohn Company, The: *See*—
Whaley, Howard A.; Snyder, William C.; Greenfield, John C.; and Coats, John H., 4,454,228, Cl. 435-253.000.

Uram, John R., Jr., to Goodyear Aerospace Corporation. Transparencies produced from epoxy resins cured with adducts of boroxines and interlayers of mercaptan resins. 4,454,201, Cl. 428-413.000.

Usui, Toshihiro; and Inomoto, Kiyoshi, to Fuji Heavy Industries, Ltd. Adjustable multi-compartmented containers. 4,453,645, Cl. 220-22.000.

Utsuda, Tetsuji: *See*—
Shimura, Kisaburo; Utsuda, Tetsuji; Suda, Hironobu; and Kobayashi, Koji, 4,454,536, Cl. 358-76.000.

Valentine, Richard J., to Motorola, Inc. MOSFET "H" Switch circuit for a DC motor. 4,454,454, Cl. 318-293.000.

Valentino, Ernest N.: *See*—
Serra, Gilbert M.; Fortier, Larry; and Valentino, Ernest N., 4,453,857, Cl. 405-128.000.

Valentino, Pete P. Key pads. 4,453,444, Cl. 84-385.00P.

Valeo: *See*—
Loizeau, Pierre, 4,453,838, Cl. 384-125.000.

Vanderpool, Clarence D.: *See*—
Scheithauer, Richard A.; Vanderpool, Clarence D.; Miller, Michael J.; and MacInnis, Martin B., 4,454,098, Cl. 423-55.000.

Van Der Tas, Gerhard: *See*—
Veldhuizen, Harmen; Streefkerk, Hendrik; and Van Der Tas, Gerhard, 4,453,874, Cl. 414-123.000.

Van Oort, Jacobus M., to Hollandse Signaalapparaten B.V. Method for increasing the cover of textile fabrics. 4,453,994, Cl. 156-154.000.

van Gelder, Willem: *See*—
Sternheim, Marek A.; and van Gelder, Willem, 4,454,001, Cl. 156-626.000.

Vanguard, Inc.: *See*—
Harken, Peter O., 4,453,486, Cl. 114-218.000.

van Rosberg, Victor J. Rinsing brush with suction base. 4,453,285, Cl. 15-164.000.

Van Wingerden, Aart. Seedling propagating container and method. 4,453,344, Cl. 47-85.000.

Varian Associates, Inc.: *See*—
Bellott, Emile M., Jr., 4,454,200, Cl. 428-411.100.

Varnum, Gerald F.; and Wiklund, David E., to Fisher Controls Company, Inc. Pneumatic controller. 4,453,559, Cl. 137-85.000.

Veeder, George T.; and Peik, Jerry A., to Merck & Co., Inc. Heteropolysaccharide S-139. 4,454,316, Cl. 536-123.000.

Veldhuizen, Harmen; Streefkerk, Hendrik; and Van Der Tas, Gerhard, to Internationale Octrooi Maatschappij "Octropa" BV. Article-handling apparatus. 4,453,874, Cl. 414-123.000.

Venkatesan, Valadi N.; and Stowe, Lawrence R., to Mobil Oil Corporation. Simultaneous crushing and retorting of oil shale with fluid jets. 4,454,018, Cl. 208-11.00R.

Venturi, Adriano, to Videocolor. Method and device for positioning and fixing the static convergence correction unit on the neck of a color television tube. 4,453,921, Cl. 445-23.000.

Veldkamp, Carl M.; and Busch, James R., to Canon Kabushiki Kaisha. Projected Luneburg lens. 4,453,801, Cl. 350-96.120.

Verduyn, Norbertus. Filtering apparatus. 4,454,033, Cl. 210-108.000.

Verge, Cyril A., to Verge, Louis Arthur. Splash guard. 4,453,728, Cl. 280-154.50R.

Verge, Louis Arthur: *See*—
Verge, Cyril A., 4,453,728, Cl. 280-154.50R.

Vericard Corporation: *See*—
Benton, William M., 4,454,414, Cl. 235-379.000.

Vetter, Robert R.; and Aker, John L., to Point of Purchase Recycling, Inc. Can sorting method and apparatus. 4,454,028, Cl. 209-548.000.

Vianova Kunstharz A.G.: *See*—
Wilfinger, Werner; Behmel, Klaus L.; and Stania, Herbert, 4,453,982, Cl. 106-308.00M.

Victor Company of Japan, Limited: *See*—
Machida, Toyotaka, 4,454,535, Cl. 358-60.000.

Videocolor: *See*—
Venturi, Adriano, 4,453,921, Cl. 445-23.000.

Vilardo, Louis V.; and Phipps, Jack R., to Bendix Corporation, The. Distributor pump with floating piston single control valve. 4,453,896, Cl. 417-462.000.

Villani, Frank J., to Schering Corporation. Tricyclic antihistamines. 4,454,143, Cl. 424-263.000.

Vinch, Samuel D.: *See*—
Flowers, Thomas A.; Vinch, Samuel D.; and Shahani, Chandru T., 4,454,187, Cl. 428-159.000.

Vinnari, Risto. Device for fastening two hulls to each other. 4,453,487, Cl. 114-249.000.

Visser, Odd M., to California Pellet Mill Company. Pellet mill void space filler. 4,453,908, Cl. 425-331.000.

Vock, Manfred H.: *See*—
Boden, Richard M.; Vock, Manfred H.; and Tyszkiewicz, Theodore J., 4,454,111, Cl. 424-58.000.

Voest-Alpine Aktiengesellschaft: *See*—
Sondermann, Karl J., 4,453,589, Cl. 164-440.000.

Vogel, Roger F.; Madgavkar, Ajay M.; and Swift, Harold E., to Gulf Research & Development Company. Method of recovering and recycling boron trifluoride catalyst. 4,454,366, Cl. 585-525.000.

Vogt, James A.: *See*—
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,453,955, Cl. 55-387.000.

Volkmar, Werner; and Schutt, Bernd, to ITT Industries, Inc. Electrohydraulic switching device. 4,454,393, Cl. 200-82.00R.

von Blucher, Hasso: *See*—
von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest, 4,454,191, Cl. 428-244.000.

von Blucher, Hubert; von Blucher, Hasso; and de Ruiter, Ernest. Waterproof and moisture-conducting fabric coated with hydrophilic polymer. 4,454,191, Cl. 428-244.000.

von der Ohe, Manfred; Flemming, Helmut; Siebelt, Dirk; Konig, Werner; and Solleder, Otto, to Daimler-Benz Aktiengesellschaft. Axle carrier for motor vehicles. 4,453,740, Cl. 280-781.000.

Vorbrueggen, Helmut: *See*—
Skuballa, Werner; Raduechel, Bernd; Schwarz, Norbert; Vorbrueggen, Helmut; Elger, Walter; Loge, Olaf; and Town, Michael-Harold, 4,454,339, Cl. 560-55.000.

Vortran Corporation: *See*—
Hughes, Nathaniel, 4,453,542, Cl. 128-200.210.

Voss Development Corporation: *See*—
Voss, Stephen C.; Voss, John W.; and Damron, E. Bruce, 4,453,603, Cl. 175-53.000.

Voss, John W.: *See*—
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Kellogg, Ronald E.; and Voss, Robert L., 4,453,356, Cl. 52-293.000.

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Voznick, Henry P., to Wahl Instruments, Inc. Thermocouple surface probe. 4,454,370, Cl. 136-221.000.

Vratny, Frederick: *See*—
Lynch, William T.; and Vratny, Frederick, 4,453,306, Cl. 29-571.000.

Vu, Quang D.: *See*—
Dawans, Francois; Binet, Daniel; Kohler, Norbert; and Vu, Quang D., 4,454,260, Cl. 523-130.000.

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Watson, Keith M.; Jones, Floyd L.; and Adams, Dwight V., 4,453,911, Cl. 425-525.000.

WABCO Fahrzeugbremsen GmbH: *See*—
Bergemann, Klaus-Dieter; Kiel, Bernd-Joachim; Konig, Heinz-Werner; and Deike, Karl-Heinz, 4,453,736, Cl. 280-711.000.

WABCO Westinghouse Compagnia Italiana Segnali S.p.A.: *See*—
Morello, Giovanni, 4,454,570, Cl. 362-231.000.

Wacker-Chemie GmbH: *See*—
Schmid, Gunter, 4,454,070, Cl. 260-429.00R.
Zeller, Norbert; Riedle, Rudolf; Lindner, Tassilo; and Wagner, Wolfgang, 4,454,331, Cl. 556-448.000.

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Griesshammer, Rudolf; Koppl, Franz; Lorenz, Helmut; and Steudten, Friedrich, 4,454,104, Cl. 423-349.000.

Wada, Kenichi; Masui, Mikio; and Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Both surface recording apparatus for copying machine. 4,453,819, Cl. 355-3.0SH.

Wada, Kunihiko; and Nakano, Motoo, to Fujitsu Limited. IGFET Having crystal orientation near (944) to minimize white ribbon. 4,454,525, Cl. 357-23.000.

Wada, Satomi; Senda, Masanori; Horii, Takashi; and Ota, Yozo, to Aisan Kogyo Kabushiki Kaisha. Variable venturi carburetor. 4,454,076, Cl. 261-44.00C.

Wada, Takuo: *See*—
Hirota, Yojiro; Shinhama, Koichi; Sato, Katsumi; and Wada, Takuo, 4,454,131, Cl. 424-248.510.

Wada, Tsuguyasu; and Ohriner, Evan K., to Amax Inc. Production of (Mo,W) C hexagonal carbide. 4,454,105, Cl. 423-440.000.

Wada, Yuichi: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,454,395, Cl. 200-147.00R.

Waddill, Harold G.; and Zimmerman, Robert L., to Texaco Inc. 2-[2-Aminoethoxy-2-ethylamino]alkanol as an epoxy curing agent. 4,454,297, Cl. 528-111.000.

Wade, Wallace R., to Ford Motor Company. Insulated diesel engine combustion chamber. 4,453,527, Cl. 123-669.000.

Wagner, Herbert: *See*—
Reimer, Karl-Juergen; Pfefferkorn, Dietmar; Koester, Eberhard; Kreimes, Norbert; Andriessen, Wilhelmus; Wagner, Herbert; and Wagner, Werner, 4,453,683, Cl. 242-199.000.

Wagner, Kuno: *See*—
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Wakatsuki, Noboru: *See*—
Fujiwara, Yoshiro; Yamada, Sumio; Hoshino, Hiroshi; and Wakatsuki, Noboru, 4,454,444, Cl. 310-360.000.

Waldo, Paul D.: *See*—
McInroy, John W.; Waldo, Paul D.; Elliott, Jo A.; Adam, Thomas L.; and White, Freddie R., 4,454,576, Cl. 364-200.000.

Walk, Hansjorg; and Wingensiefen, Wilhelm, to Keiper Automobiltechnik GmbH & Co. KG. Hinge, particularly for seats with adjustable backs. 4,453,767, Cl. 297-362.000.

Walker, Clifford G. Integrated optics transducer. 4,454,418, Cl. 250-227.000.

Walker, Loren H.: *See*—
Boettner, Fred H.; and Walker, Loren H., 4,454,470, Cl. 324-78.00R.

Walker, Starnes E., to Phillips Petroleum Company. Calibration and status monitor comparator apparatus and method. 4,454,434, Cl. 307-523.000.

Wallace, Christopher D. Hydraulic shock absorber. 4,453,638, Cl. 188-282.000.

Wallace, Steven L.; Griffin, Freddie, Jr.; and Tvedt, Thorwald J., Jr., to Dow Chemical Company, The. Boiler scale prevention employing an organic chelant. 4,454,046, Cl. 210-698.000.

Wallner, Peter; and Hollenstein, Peter, to H. Schurter AG. Fuse holder, especially fuse holder for electrical devices. 4,453,794, Cl. 339-90.00F.

Walter, Richard T., to Container Corporation of America. Bacon package inner pad. 4,453,628, Cl. 206-45.310.

Walters, Richard T.: *See*—
Helms, Charles R.; Bousum, John V.; Walters, Richard T.; and Carr, William H., 4,453,630, Cl. 206-158.000.

Walters, William R. Non-chattering float controlled pilot operated diaphragm valve. 4,453,563, Cl. 137-414.000.

Wanesky, William R.: *See*—
Ronemus, James R.; Sentman, Lowell; and Wanesky, William R., 4,453,414, Cl. 73-827.000.

Wang Associates: *See*—
Wang, Chia-Gee, 4,454,233, Cl. 436-525.000.

Wang, Chia-Gee, to Wang Associates. Method of tagged immunoassay. 4,454,233, Cl. 436-525.000.

Ward, Arthur T. Methods for coating and patching with asphalt compositions. 4,453,980, Cl. 106-281.00R.

Ward, Leonard H., to M. E. Canfield Company. Rack structure. 4,453,472, Cl. 108-107.000.

Ward, Terence J.; and Archibald, John L., to John Wyeth & Brother, Limited. α_2-Adrenoceptor antagonistic benzoquinolizines. 4,454,139, Cl. 424-258.000.

Warner-Lambert Company: *See*—
Butler, Donald E., 4,454,327, Cl. 548-551.000.
Miserez, Claude L., 4,453,310, Cl. 30-47.000.

Warren M. Jackson, Inc.: *See*—
Jackson, Warren M., 4,453,308, Cl. 29-785.000.

Warren, Richard E.: *See*—
Buck, Dean C.; Warren, Richard E.; Smith, David E.; and Rustici, David, 4,453,825, Cl. 356-5.000.

Warrington Inc.: *See*—
Bourque, Rene, 4,453,727, Cl. 280-11.120.

Warwick, Edward H.; and Parker, Donald L., to General Motors Corporation. Drum brake shoe and lining assembly and method of making same. 4,453,621, Cl. 188-250.00G.

Waryasz, Richard E., to Combustion Engineering, Inc. Fluidized bed boiler having a segmented grate. 4,453,494, Cl. 122-4.00D.

Watanabe, Hiroyuki; and Tanaka, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel tank construction of motor vehicle. 4,453,724, Cl. 280-5.00A.

Watanabe, Takeshi: *See*—
Nodai, Etsuo; and Watanabe, Takeshi, 4,453,917, Cl. 433-5.000.

Watanabe, Toshiyuki: *See*—
Suguro, Yoshihiro; Nagamoto, Masanaka; Motosugi, Takanori; Hotta, Yoshihiko; and Watanabe, Toshiyuki, 4,454,521, Cl. 346-208.000.

Watanabe, Yoji; Morimura, Toshio; and Toyoda, Yukio, to Showa Denko Kabushiki Kaisha. Method for thermal cracking of hydrocarbons in an apparatus of an alloy having alkali or alkaline earth metals in the alloy to minimize coke deposition. 4,454,021, Cl. 208-48.00R.

Watchorn, Ernest W., to E. W. Watchorn & Associates, Inc. Connector for joining structural components. 4,453,488, Cl. 114-266.000.

Waterbury, L. David, to Syntex (U.S.A.) Inc. Use of pyrrolo pyrroles in treatment of ophthalmic diseases. 4,454,151, Cl. 424-274.000.

Watkinson, Stephen W., to U.S. Philips Corporation. Phase-locked loop including an amplifier circuit arrangement. 4,454,484, Cl. 331-17.000.

Watson, Keith M.; Jones, Floyd L.; and Adams, Dwight V., to W. R. Grace & Co. Blow mold. 4,453,911, Cl. 425-525.000.

Watson, William: *See*—
Frias, Robert; Cain, Troy D.; Gallagher, John J., Jr.; and Watson, William, 4,453,872, Cl. 414-22.000.

Wattron, Albert; and Quirin, Michel, to Belrecolt S.A. Agricultural machine for the tedding or conditioning of fodder. 4,453,376, Cl. 56-370.000.

Wayman, William G.; and Engelbert, Harald, to Crosfield Electronics Limited. Holding mechanism. 4,453,425, Cl. 74-2.000.

Webasto-Werk W. Baier GmbH & Co.: *See*—
Glaser, Kurt, 4,453,922, Cl. 464-57.000.

Weber-Stephen Products Co.: *See*—
Schlosser, Erich J., 4,453,530, Cl. 126-25.00R.

Weck, Bernd: *See*—
Sauerwald, Walter; Weck, Bernd; and Schmidts, Klaus, 4,453,435, Cl. 82-1.400.

Weetman, Ronald J.: *See*—
Engelbrecht, Horst P.; and Weetman, Ronald J., 4,454,078, Cl. 261-93.000.

Wegu Gummi-U. Kunststoffwerke Walter Drabing KG: *See*—
Hohn, Werner, 4,454,181, Cl. 428-68.000.

Weigl, James: *See*—
Clawson, Burrell E.; and Weigl, James, 4,453,835, Cl. 374-185.000.

Weilbacker, Thomas O.: *See*—
Costantini, John J.; Weilbacker, Thomas O.; and Guglielmo, Joseph A., 4,454,577, Cl. 364-200.000.

Weingart, Richard C.: *See*—
Fulton, Fred J.; Honodel, Charles A.; Holman, William R.; and Weingart, Richard C., 4,453,423, Cl. 73-863.000.

Weir, David: *See*—
Anderson, John; and Weir, David, 4,453,551, Cl. 128-704.000.

Weis, Anton, to Albert-Frankenthal AG. Printing presses. 4,453,464, Cl. 101-153.000.

Weisz, William, to Singer Company, The. Pushbutton control for sewing machine. 4,453,478, Cl. 112-158.00A.

Welch, James H.: *See*—
Kodadek, Robert; and Welch, James H., 4,453,675, Cl. 239-675.000.

Welland, David R., to DBX, Inc. Multiplier circuit. 4,454,433, Cl. 307-493.000.

Wellner, Wolfgang: *See*—
Gruber, Hermann; Wellner, Wolfgang; Diehl, Hermann; and Monig, Dieter, 4,453,358, Cl. 52-309.800.

Wells, Douglas M.: *See*—
Pilat, John F.; Wells, Douglas M.; Hamilton, Eric; and Compton, J. Theodore, 4,454,579, Cl. 364-200.000.

Wells, William L.: *See*—
Garrison, Forrest C.; and Wells, William L., 4,454,101, Cl. 423-242.000.

Welter, Andre; Leyck, Sigurd; and Etschenberg, Eugen, to A. Nattermann & Cie GmbH. Cycloalkyl derivatives of benzisoselenazolones. 4,454,068, Cl. 260-239.00R.

Welter, James J., to Du Pont de Nemours, E. I., and Company. Organic oxidants and radical traps for negative-working silver halide emulsions. 4,454,223, Cl. 430-533.000.

Wenstrup, Jan F., to Air-Shields, Inc. Infusion pumping apparatus. 4,453,897, Cl. 417-477.000.

Werner, Thomas R.; Falco, Charles M.; and Schuller, Ivan K., to United States of America, Energy. Layered ultra-thin coherent structures used as electrical resistors having low temperature coefficient of resistivity. 4,454,495, Cl. 338-195.000.

West Electric Company, Ltd.: *See*—
Taniguchi, Toshihiko, 4,454,441, Cl. 310-328.000.

Westhoff, Richard P.: *See*—
Otey, Felix H.; and Westhoff, Richard P., 4,454,268, Cl. 524-47.000.

Westinghouse Electric Corp.: *See*—
Blais, Phillip D., 4,454,209, Cl. 430-5.000.
Hollmann, Martin, 4,453,449, Cl. 89-1.806.
Kimmel, Donald S.; and South, William H., 4,454,428, Cl. 290-40.00R.

Westner, Andrew A.: *See*—
Oswald, Alexis A.; Jermansen, Torris G.; Westner, Andrew A.; and Huang, I-Der, 4,454,353, Cl. 568-454.000.
Westran Corporation: *See*—
Jocz, Armin E., 4,454,504, Cl. 340-665.000.
Westvaco Corporation: *See*—
Dilling, Peter; and Sarjeant, Peter T., 4,454,066, Cl. 260-124.00R.
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, to Dr. Karl Thomae GmbH. 6α-Methoxy-penicillins. 4,454,128, Cl. 424-229.000.
Whaley, Howard A.; Snyder, William C.; Greenfield, John C.; and Coats, John H., to Upjohn Company, The. Biologically pure culture of *Streptomyces microspinus* NRRL 12524 capable of producing antibiotic U-64,815. 4,454,228, Cl. 435-253.000.
Whetstone, Clifford O., Sr. Fishhook setting trigger. 4,453,331, Cl. 43-15.000.
White, Charles S. Method of molding a low friction bearing. 4,454,088, Cl. 264-115.000.
White, Freddie R.: *See*—
Cason, William C.; White, Freddie R.; Adam, Thomas L.; and Levine, Lewis J., 4,454,592, Cl. 364-900.000.
McInroy, John W.; Waldo, Paul D.; Elliott, Jo A.; Adam, Thomas L.; and White, Freddie R., 4,454,576, Cl. 364-200.000.
White, John C.: *See*—
Janes, Timothy W.; and White, John C., 4,453,305, Cl. 29-571.000.
White, Richard T.: *See*—
Davis, Joseph; and White, Richard T., 4,453,783, Cl. 308-184.00R.
Whitney, John K. Medical apparatus. 4,453,538, Cl. 128-24.00R.
Wicanders AB: *See*—
Berglund, Jan, 4,453,644, Cl. 215-255.000.
Wick, Raymond V., to United States of America, Air Force. Eye safe laser transmitter. 4,453,806, Cl. 350-431.000.
Wico Corporation: *See*—
Kim, Syng N., 4,454,397, Cl. 200-296.000.
Widen, Bo G., to GKN Stenman, AB. Method of manufacturing a key for a cylindrical lock. 4,453,432, Cl. 76-110.000.
Widmer, Jurg: *See*—
Burge, Theodor; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,454,311, Cl. 528-245.000.
Wieland, Clarence W. Vacuum induced trash collection system. 4,453,286, Cl. 15-313.000.
Wightman, Donald R. Hand grip for fishing rod handle. 4,453,332, Cl. 43-23.000.
Wightman, James D., to Air Preheater Company, Inc., The. Expansion guide. 4,453,592, Cl. 165-82.000.
Wiklund, David E.: *See*—
Varnum, Gerald F.; and Wiklund, David E., 4,453,559, Cl. 137-85.000.
Wilder, Paul R., to Dover Corporation. Automatic shut-off dispensing nozzle responsive to liquid in a tank reaching a predetermined level and to a supply pressure. 4,453,578, Cl. 141-209.000.
Wilfinger, Werner; Behmel, Klaus L.; and Stania, Herbert, to Vianova Kunstharz A.G. Stabilized metal pigments and method of producing same. 4,453,982, Cl. 106-308.00M.
Wilkins, John J., to E. W. Buschman Co., The. Accumulator conveyor. 4,453,627, Cl. 198-781.000.
Wilkins, Robert B.: *See*—
Cook, Michael A.; Curzons, Alan D.; and Wilkins, Robert B., 4,454,069, Cl. 260-245.300.
Wilkins, Ronald W. High capacity mat cleaning machine. 4,453,386, Cl. 68-19.100.
Williams, Charles G. D., to Environmentally Safe Products, Corp. Rodent feed station. 4,453,337, Cl. 43-131.000.
Williams, David E.; Tofield, Bruce C.; and McGeehin, Peter, to Lucas Industries plc. Oxygen sensors. 4,454,494, Cl. 338-34.000.
Williams, Sidney J.: *See*—
Braithwaite, John D.; King, Derrick O.; and Williams, Sidney J., 4,453,651, Cl. 222-82.000.
Williams, Terrance L., to United States Gypsum Company. Lightweight joint compound. 4,454,267, Cl. 524-43.000.
Williamson, Warren L.: *See*—
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Willis, Michael: *See*—
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Wilpon, Jay G.: *See*—
Pirz, Frank C.; Rabiner, Lawrence R.; and Wilpon, Jay G., 4,454,586, Cl. 364-513.500.
Wilson, Alan K.: *See*—
Falling, Stephen N.; and Wilson, Alan K., 4,454,340, Cl. 560-56.000.
Wilson, Dennis: *See*—
Philofsky, Elliott; Parkinson, Ward; and Wilson, Dennis, 4,454,529, Cl. 357-75.000.
Wilson, Elwin R. Centrifugal venturi. 4,453,886, Cl. 415-83.000.
Wingensiefen, Wilhelm: *See*—
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Wingert, James A.: *See*—
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Winn, Ray: *See*—
Hershel, Ronald S.; and Winn, Ray, 4,453,828, Cl. 356-357.000.
Winslow, James C., to Winslow/McDowell, Inc. Air-operated, hydraulically-controlled drillmotor. 4,453,868, Cl. 408-138.000.
Winslow/McDowell, Inc.: *See*—
Winslow, James C., 4,453,868, Cl. 408-138.000.
Wirth Gallo & Co.: *See*—
Wirth, Johannes; Gallo, Mario; and Saner, Kaspar, 4,453,608, Cl. 177-210.0FP.
Wirth, Johannes; Gallo, Mario; and Saner, Kaspar, to Wirth Gallo & Co. Mass and force meter. 4,453,608, Cl. 177-210.0FP.
Wirz, Armin: *See*—
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Wisconsin Alumni Research Foundation: *See*—
Borden, Ernest C.; and Shrago, Earl S., 4,454,115, Cl. 424-85.000.
Witt, John E. Device for attachment of a resilient and/or flexible tube onto a nipple, nozzle or like connection. 4,453,696, Cl. 251-4.000.
Witte, Paul A.; and Pappas, Michael J., to Falcon Safety Products, Inc. Control valve for an aerosol can. 4,453,650, Cl. 222-43.000.
Witte, Wolfgang, to Bodenseewerk Perkin-Elmer & Co., GmbH. Double monochromator. 4,453,826, Cl. 356-333.000.
Wittmann, Joseph W.; and Evans, John M., to UCO Optics, Inc. Cured cellulose ester, method of curing same, and use thereof. 4,454,295, Cl. 527-311.000.
WOFOR AG: *See*—
Hecht, Sidney M., 4,454,124, Cl. 424-195.000.
Woitun, Eberhard: *See*—
Wetzel, Bernd; Eberlein, Wolfgang; Trummlitz, Gunter; Woitun, Eberhard; Maier, Roland; Reuter, Wolfang; Lechner, Uwe; and Goeth, Hanns, 4,454,128, Cl. 424-229.000.
Wolf, Elmar: *See*—
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Wolk, Claus: *See*—
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Wollman, Sandford L., to Minnesota Mining and Manufacturing Company. Strip material with heat-formed hooked heads. 4,454,183, Cl. 428-92.000.
Woltermann, Gerald M., to Ashland Oil, Inc. New compositions. 4,454,244, Cl. 502-208.000.
Woltersdorf, Otto, Jr.; Schwam, Harvey; Michelson, Stuart R.; and Sondey, John M., to Merck & Co., Inc. 5-Hydroxy-2-benzothiazolesulfonamide for the topical treatment of elevated intraocular pressure. 4,454,148, Cl. 424-270.000.
Wood, Grady M., to Harris Corp. Power efficient TTL buffer for driving large capacitive loads. 4,454,432, Cl. 307-456.000.
Woodstream Corporation: *See*—
Landell, Harper, 4,453,786, Cl. 312-31.100.
Woodthorpe, John: *See*—
Hobson, Barry C.; and Woodthorpe, John, 4,454,238, Cl. 501-38.000.
Woodward, Milton H.: *See*—
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Wormald International Limited: *See*—
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Wray, Kenneth D.: *See*—
Colgrove, Donald A.; Schoggen, Howard L.; and Wray, Kenneth D., 4,454,359, Cl. 568-916.000.
Wu, C. H. Multi-axle driving mechanism for agricultural carrier. 4,453,617, Cl. 180-247.000.
Wuelfing, Johann A.: *See*—
Goring, Joachim E., 4,454,138, Cl. 424-253.000.
Wunsch, Reinhold; and Lezius, Albrecht. Free-programmable, modular control system with integrated user definable display and operating devices. 4,454,596, Cl. 364-900.000.
Wurmb, Herbert: *See*—
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Wurmli, Albert; and Tempel, Christel, to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,453,744, Cl. 346-216.000.
Xerox Corporation: *See*—
Gruber, Robert J.; Julien, Paul C.; and Yourd, Raymond A., III, 4,454,214, Cl. 430-110.000.
Shenoy, Vittal U., 4,454,559, Cl. 361-214.000.
Smith, Henry E., 4,453,847, Cl. 400-645.500.
Yip, Kwok L.; Hsing, To R.; Daniele, Joseph J.; and Ritter, Joachim A., 4,454,547, Cl. 358-293.000.
Yaegashi, Takashi: *See*—
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Yagishita, Teruo; Okada, Seiji; Narusawa, Toshiaki; and Okuyama, Hirofumi, to Fujitsu Limited. Organic photosensitive material for electrophotography. 4,454,213, Cl. 430-76.000.
Yamada, Kouzi: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Kuwana, Noriaki; Abe, Shinya; and Yamada, Kouzi, 4,454,330, Cl. 549-420.000.
Yamada, Sumio: *See*—
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Yamadera, Takashi; and Hayashi, Nobuyuki, to Hitachi Chemical Company, Ltd. Photosensitive resin composition comprised of a

polymer obtained from an aliphatic amino group-containing monomer as a comonomer. 4,454,219, Cl. 430-281.000.
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 4,454,395, Cl. 200-147.00R.
Yamagishi, Seiichi: *See*—
Ishii, Keijiro; Nakatani, Keiji; and Yamagishi, Seiichi, 4,453,682, Cl. 242-192.000.
Yamaguchi, Masayuki: *See*—
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Murakami, Masahiro; Kobayashi, Masateru; Yamamoto, Kimiyo; and Shibuya, Chisei, 4,454,323, Cl. 548-251.000.
Yamamoto, Kiyomi: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,454,395, Cl. 200-147.00R.
Yamamoto, Kunio: *See*—
Hino, Hiroyuki; Yamamoto, Kunio; Ozono, Ryuichi; Aratani, Hiroshi; and Kawamoto, Susumu, 4,453,393, Cl. 72-243.000.
Yamamoto, Tsuneo: *See*—
Uda, Junji; Yamamoto, Tsuneo; and Kosugi, Takumi, 4,454,276, Cl. 524-209.000.
Yamasaki, Masafumi, to Olympus Optical Company Ltd. Automatic exposure controller for a camera. 4,453,811, Cl. 354-412.000.
Yamashiro, Kunio: *See*—
Nakajima, Akira; Furukawa, Takayoshi; Nakano, Atsuo; Yamashiro, Kunio; and Goda, Katsumi, 4,453,688, Cl. 248-262.000.
Yamashita, Kanji: *See*—
Yoshinaka, Tadaaki; and Yamashita, Kanji, 4,454,530, Cl. 358-10.000.
Yamashita, Seiji: *See*—
Tahara, Kazuo; Matsui, Takayuki; Koharagi, Haruo; Sasamoto, Hisaya; Yamashita, Seiji; and Takahashi, Noriyoshi, 4,454,460, Cl. 318-491.000.
Yamashita, Seizi; Miyashita, Kunio; Tanabe, Syoji; and Shimotsu, Tadao, to Hitachi, Ltd. Synchronized induction motor. 4,454,438, Cl. 310-162.000.
Yamashita, Shoji: *See*—
Kobayashi, Akio; Yanabu, Satoru; and Yamashita, Shoji, 4,454,476, Cl. 324-424.000.
Yamatsu, Isao; Inai, Yuichi; Suzuki, Takeshi; Abe, Shinya; Satoh, Masaru; and Seto, Naosuke, to Eisai Co., Ltd. Phosphoramide derivatives and medicines containing the same. 4,454,126, Cl. 424-212.000.
Yamauchi, Shiro: *See*—
Tanaka, Masaaki; Yamauchi, Shiro; and Nakayama, Shigeki, 4,453,953, Cl. 55-163.000.
Yamauchi, Yasutaka: *See*—
Saji, Hideo; Yamauchi, Yasutaka; and Kobashi, Mamoru, 4,453,515, Cl. 123-339.000.
Yamazaki, Hideo: *See*—
Ariyama, Kenzo; Yamazaki, Hideo; and Hirota, Minoru, 4,454,210, Cl. 430-31.000.
Yanabu, Satoru: *See*—
Kobayashi, Akio; Yanabu, Satoru; and Yamashita, Shoji, 4,454,476, Cl. 324-424.000.
Yang, Yung-hsiung: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,454,130, Cl. 424-248.400.
Yarborough, John M., Jr., to SRI International. Digital Miller decoder. 4,454,499, Cl. 340-347.0DD.
Yashima Chemical Industrial Co., Ltd.: *See*—
Takematsu, Tetsuo; Suzuki, Akinori; and Toda, Kazuya, 4,453,975, Cl. 71-118.000.
Yeh, Chin-Lung: *See*—
Levitt, George; Yeh, Chin-Lung; and Budzinski, John C., 4,453,970, Cl. 71-93.000.
Yip, Kwok L.; Hsing, To R.; Daniele, Joseph J.; and Ritter, Joachim A., to Xerox Corporation. Raster output scanner having a full width electro-mechanical modulator. 4,454,547, Cl. 358-293.000.
Yodis, John: *See*—
Laganis, Deno; and Yodis, John, 4,454,197, Cl. 428-379.000.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Gain-controlled amplifier. 4,454,478, Cl. 330-254.000.
Yonemori, Takaji: *See*—
Miyake, Hiroyuki; Sagara, Seiji; Kagiura, Kazuo; Sasaki, Nobukazu; and Yonemori, Takaji, 4,453,824, Cl. 355-57.000.
Yoneyama, Tomio: *See*—
Kaneko, Masaharu; Ozawa, Tetsuo; Yoneyama, Tomio; Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,454,057, Cl. 252-299.100.
Yorgiadis, Alexander. Strain gage load cell having improved sensitivity. 4,453,422, Cl. 73-862.660.
Yoshida Kogyo K. K.: *See*—
Takahashi, Kihei, 4,453,990, Cl. 156-66.000.
Yoshida, Makoto: *See*—
Suzuki, Fuminori; Yoshida, Makoto; and Morokawa, Shigeru, 4,453,834, Cl. 368-201.000.
Yoshida, Yoshinori: *See*—
Oka, Hiroshi; Yoshida, Yoshinori; and Naitou, Yuuzi, 4,454,310, Cl. 528-188.000.
Yoshii, Motokazu: *See*—
Hayashi, Motoshige; Tanaka, Shigetoshi; Yoshii, Motokazu; and Doi, Tsuneo, 4,454,087, Cl. 264-53.000.
Yoshikawa, Shigeharu: *See*—
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; Sugimoto, Toshiyuki; and Sugimoto, Kaname, 4,454,161, Cl. 426-48.000.
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi-Dow Limited. Composition for drawn film. 4,454,303, Cl. 525-211.000.
Yoshinaka, Tadaaki; and Yamashita, Kanji, to Sony Corporation. Color framing signal generator. 4,454,530, Cl. 358-10.000.
Yoshinari, Yuji, to Miura Co., Ltd. Multitubular once-through boiler. 4,453,496, Cl. 122-6.00A.
Yoshiyasu, Hajimu: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; Yamamoto, Kiyomi; Yoshiyasu, Hajimu; and Wada, Yuichi, 4,454,395, Cl. 200-147.00R.
Yoshizawa, Atsuko: *See*—
Iida, Yoshimitsu; Yoshizawa, Atsuko; Kujirai, Tatuo; and Ogasawara, Toshichika, 4,454,108, Cl. 424-16.000.
Young, Ian R., to Picker International Limited. Nuclear magnetic resonance systems. 4,454,474, Cl. 324-309.000.
Young, James L., to Nelmor Company, Inc. Sprue separator. 4,454,030, Cl. 209-669.000.
Young, John E.: *See*—
Fraioli, Anthony V.; and Young, John E., 4,454,207, Cl. 429-17.000.
Young, John S.: *See*—
Daniels, William R.; and Young, John S., 4,454,388, Cl. 179-175.20R.
Young, Robert A. Photoionizer. 4,454,425, Cl. 250-423.00P.
Young, Robert N., to Merck Sharp & Dohme I.A. Corp. N-(Alkenyl)-2-aza-2'-hydroxy-5,6-benzotricyclo[6.3.0^{1,6}.0^{4,11}] undecanes. 4,454,325, Cl. 548-425.000.
Yourd, Raymond A., III: *See*—
Gruber, Robert J.; Julien, Paul C.; and Yourd, Raymond A., III, 4,454,214, Cl. 430-110.000.
Yushina, Yoshinori: *See*—
Shimodaira, Chiaki; Yushina, Yoshinori; Kamata, Hiroshi; Komatsu, Hideo; Kurima, Akinori; Mabu, Osamu; and Tanaka, Yoshiharu, 4,454,038, Cl. 210-150.000.
Zagranski, Raymond D.; and Howlett, James J., to Chandler Evans, Inc. Torsional mode suppressor. 4,453,378, Cl. 60-39.020.
Zahnradfabrik Friedrichshafen AG.: *See*—
Schier, Rainer, 4,454,031, Cl. 210-86.000.
Zander, Rolf; and Wolf, Hans U. Determination of the acid-base status of blood. 4,454,229, Cl. 436-68.000.
Zausmer, Norman A.: *See*—
Chapelsky, Orest; and Zausmer, Norman A., 4,453,653, Cl. 222-528.000.
Zavarin, Eugene: *See*—
Stofko, Jan; and Zavarin, Eugene, 4,454,005, Cl. 162-12.000.
Zeller, Norbert; Riedle, Rudolf; Lindner, Tassilo; and Wagner, Wolfgang, to Wacker Chemie GmbH. Process for preparing tetrafluoroethyloxyalkyl silanes. 4,454,331, Cl. 556-448.000.
Zelli, Joseph M. Adjustable platform guide for circular saws. 4,453,438, Cl. 83-745.000.
Zemel, Jay N., to University of Pennsylvania, Trustees of the. Pyroelectric vorticimeter. 4,453,405, Cl. 73-204.000.
Zemtsov, Mikhail U.: *See*—
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Burmakin, Viktor I.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Zemtsov, Mikhail U.; Bobovnikov, Nikolai G.; Sorokin, Viktor A.; Marchenkov, Nikolai B.; Tyatibrat, Alexandr L.; and Tonaevsky, Ernst L., 4,453,348, Cl. 51-109.00R.
Zena Equipment, Inc.: *See*—
Gudgel, Howard S., 4,453,884, Cl. 414-745.000.
Zenith Radio Corporation: *See*—
Godawski, Theodore J., 4,454,572, Cl. 363-68.000.
Zentner, Erich; and Bingemann, Wilhelm, to Hoechst Aktiengesellschaft. Polyvinyl chloride film having specific properties, and a process for its manufacture. 4,454,294, Cl. 526-344.300.
Zepkowski, John. Ski maneuvering apparatus. 4,453,742, Cl. 280-818.000.
Zerfahs, Arthur S., to Qonaar Corporation. Bill transport system for a farebox. 4,453,667, Cl. 232-7.000.
Ziegler, Gerd W., to TSH-Handels AG. Roller skate or the like with brake attachment. 4,453,726, Cl. 280-11.200.
Ziemer, John H.: *See*—
Pahade, Ravindra F.; Ziemer, John H.; and Cheung, Harry, 4,453,957, Cl. 62-25.000.
Zilog, Inc.: *See*—
Trueblood, Richard K., 4,454,528, Cl. 357-40.000.
Zimmerly, Robert D., to Ladish Co. Positive displacement pump. 4,453,901, Cl. 418-206.000.
Zimmerman, Eberhard; and Schiele, Ulrich, to Hormon-Chemie Munchen GmbH. Composition for sealing and healing wounds. 4,453,939, Cl. 604-368.000.
Zimmerman, Robert L.: *See*—
Waddill, Harold G.; and Zimmerman, Robert L., 4,454,297, Cl. 528-111.000.
Zimmermann, Wolfgang; Harreus, Albrecht; and Gutte, Richard, to Hoechst Aktiengesellschaft. Process for changing the water content of water-absorbing or water-releasing material. 4,453,320, Cl. 34-95.000.

Zinder, Anatoly M.: *See*—
Khabovich, Vladimir V.; Basenok, Gennady S.; Konyshev, Leonid K.; Sidorenko, Valery A.; Gleb, Anatoly K.; Zinder, Anatoly M.; Konnikov, Mikhail N.; and Gorelik, Boris E., 4,453,392, Cl. 72-75.000.

Zink, Frederick J., to G5E, Inc. Weight scale with side load protection. 4,453,607, Cl. 177-179.000.

Zraiko, Mikhail V.: *See*—
Genyk, Stepan N.; Krysa, Vasily M.; Zraiko, Mikhail V.; Vovk, Ljubomir G.; and Pyatiletov, Ivan I., 4,453,661, Cl. 227-19.000.

Zushi, Sadao, to Tokyo Shibaura Denki Kabushiki Kaisha. High frequency heating apparatus with selectable steam generating means. 4,454,404, Cl. 219-10.55B.

Zwilgmeyer, Dagfinn, to Sentralinstitutt for Industriell Forskning. Wall structure, wall element for use in the wall structure and method for making the same. 4,453,357, Cl. 52-309.800.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF JUNE, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akzona Incorporated: *See*—
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, Re. 31,599, Cl. 156-167.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ikeda, Masataka; Ishikawa, Tatsuo; and Shima, Tsukasa, Re. 31,601, Cl. 428-93.000.

Ikeda, Masataka; Ishikawa, Tatsuo; and Shima, Tsukasa, to Asahi Kasei Kogyo Kabushiki Kaisha. Composite fabric combining entangled fabric of microfibers and knitted or woven fabric and process for producing same. Re. 31,601, Cl. 428-93.000.

Ishikawa, Tatsuo: *See*—
Ikeda, Masataka; Ishikawa, Tatsuo; and Shima, Tsukasa, Re. 31,601, Cl. 428-93.000.

Kung, Roger I.; and Moench, Jerry D., to Motorola, Inc. Output buffer with voltage sustainer circuit. Re. 31,600, Cl. 307-530.000.

Moench, Jerry D.: *See*—
Kung, Roger I.; and Moench, Jerry D., Re. 31,600, Cl. 307-530.000.

Motorola, Inc.: *See*—
Kung, Roger I.; and Moench, Jerry D., Re. 31,600, Cl. 307-530.000.

Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, to Akzona Incorporated. Low density matting and process. Re. 31,599, Cl. 156-167.000.

Schenesse, Klemens: *See*—
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, Re. 31,599, Cl. 156-167.000.

Shima, Tsukasa: *See*—
Ikeda, Masataka; Ishikawa, Tatsuo; and Shima, Tsukasa, Re. 31,601, Cl. 428-93.000.

Vollbrecht, Rolf: *See*—
Rasen, Alfred; Vollbrecht, Rolf; and Schenesse, Klemens, Re. 31,599, Cl. 156-167.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Corning Glass Works: *See*—
Palmquist, Ronald W., B1 4,366,571, Cl. 373-30.000.

Daly, Robert E.: *See*—
Gacki, Leonard W.; and Daly, Robert E., B1 4,217,054, Cl. 366-150.000.

Exxon Research & Engineering Co.: *See*—
Puls, Friedrich H.; and Ruhnke, Klaus D., B1 4,260,840, Cl. 585-259.000.

Gacki, Leonard W.; and Daly, Robert E., to Picker Corp. Fluid mixing and dispensing system. B1 4,217,054, 6-12-84, Cl. 366-150.000.

Palmquist, Ronald W., to Corning Glass Works. Electric furnace construction. B1 4,366,571, 6-12-84, Cl. 373-30.000.

Picker Corp.: *See*—
Gacki, Leonard W.; and Daly, Robert E., B1 4,217,054, Cl. 366-150.000.

Puls, Friedrich H.; and Ruhnke, Klaus D., to Exxon Research & Engineering Co. Butene-1 containing feed purification process (CS-165). B1 4,260,840, 6-12-84, Cl. 585-259.000.

Ruhnke, Klaus D.: *See*—
Puls, Friedrich H.; and Ruhnke, Klaus D., B1 4,260,840, Cl. 585-259.000.

LIST OF DESIGN PATENTEES

Aaron, Willard. Bath accessory. 274,201, 6-12-84, Cl. D6-86.000.

Allen, Philip R.; and Porter, Terence F., to Mason & Porter Limited. Rotary lawn mower. 274,250, 6-12-84, Cl. D15-14.000.

Alonso, Frank: *See*—
Mellinger, Ellis; and Alonso, Frank, 274,238, Cl. D12-304.000.

Alvermann, Palmer C. Lift for raising and lowering an object. 274,275, 6-12-84, Cl. D34-33.000.

American Home Products Corporation: *See*—
Banasiak, Joseph G., 274,274, Cl. D32-45.000.

Andersson, Jan E. Inflatable splint. 274,264, 6-12-84, Cl. D24-64.000.

Aoijs, Dieudonne G., to U.S Philips Corporation. Portable radio receiver. 274,246, 6-12-84, Cl. D14-71.000.

Aramaki, Shinichiro, to Kabushiki Kaisha Yakult Honsha. Container for liquids or the like. 274,217, 6-12-84, Cl. D9-349.000.

Aramaki, Shinichiro, to Kabushiki Kaisha Yakult Honsha. Container for liquids or the like. 274,218, 6-12-84, Cl. D9-355.000.

Argandona, Augusto, to Quaker Oats Company, The. Toy sink. 274,281, 6-12-84, Cl. D21-121.000.

Asaki, James; and MacKenzie, William G., to International Telephone and Telegraph Corporation. Cordless telephone system. 274,243, 6-12-84, Cl. D14-53.000.

AT&T Bell Laboratories: *See*—
Genaro, Donald M.; McGarvey, John N.; Stern, Arthur L., Jr.; and Tilley, Alvin R., 274,247, Cl. D14-73.000.

Auerbach, Fredrick F. Combined garbage disposal plunger and brush. 274,273, 6-12-84, Cl. D32-35.000.

Banasiak, Joseph G., to American Home Products Corporation. Disposable oven cleaner applicator. 274,274, 6-12-84, Cl. D32-45.000.

Beirise, Jean M.: *See*—
Coons, John C.; and Beirise, Jean M., 274,245, Cl. D14-64.000.

Biesecker, Frederick N., to Drug Plastics & Glass Company. Plastic bottle. 274,220, 6-12-84, Cl. D9-352.000.

Biesecker, Frederick N., to Drug Plastics & Glass Company. Plastic bottle. 274,221, 6-12-84, Cl. D9-352.000.

Bourque, Rene, to Warrington Inc. Skate. 274,284, 6-12-84, Cl. D21-225.000.

Bradford Safety Products, Inc.: *See*—
Brookshire, Phillip L.; Huddleston, Earl J.; and Hunt, David L., 274,287, Cl. D22-1.000.

Bridgestone Tire Company Limited: *See*—
Kohno, Mitsuji; and Inoue, Osamu, 274,232, Cl. D12-146.000.

Brookshire, Phillip L.; Huddleston, Earl J.; and Hunt, David L., to Bradford Safety Products, Inc. Holder for a tear gas cartridge. 274,287, 6-12-84, Cl. D22-1.000.

Budde, Donald F., to Urethane Roller Specialists, Inc. Swing seat. 274,285, 6-12-84, Cl. D21-246.000.

Budde, Donald F., to Urethane Roller Specialists, Inc. Swing seat. 274,286, 6-12-84, Cl. D21-246.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 274,268, Cl. D26-26.000.
Schwartz, Frederic W., 274,271, Cl. D26-125.000.

Cain, David E., to Halliburton Company. Hydraulic filter press for pressing liquid from a drilling mud or the like. 274,227, 6-12-84, Cl. D10-83.000.

Caldwell, John W. Caster. 274,215, 6-12-84, Cl. D8-375.000.

Carlson, Glen B., to Kansas Sciences Corporation. Filter clamp for pipes and the like. 274,216, 6-12-84, Cl. D8-394.000.

Caruso, Jerome, to Litton Business Systems, Inc. Arm rest for a business chair. 274,204, 6-12-84, Cl. D6-194.000.

Chartier, Donald: *See—*
Janes, Richard; and Chartier, Donald, 274,255, Cl. D15-199.000.
Colemore-Williams, Robin V., to Merryware Industries, Ltd. Brush. 274,196, 6-12-84, Cl. D4-12.000.
Conair Corporation: *See—*
Doyle, Edward J., 274,272, Cl. D28-19.000.
Coons, John C.; and Beirise, Jean M., to Masco Corp. of Indiana. Telephone handset. 274,245, 6-12-84, Cl. D14-64.000.
Cushing, Michael J., to Rotalac Plastics Limited. Extruded section. 274,267, 6-12-84, Cl. D25-74.000.
De Vale, Donald P.; Wilbrandt, Howard B.; Tomlinson, Dennis E.; and Kubacki, Leonard J., to Industrial Design Electronic Associates, Inc. Computer faceplate. 274,248, 6-12-84, Cl. D14-115.000.
de Vos, Hendrik A. J., to GTE Products Corporation. Fixture hanger. 274,214, 6-12-84, Cl. D8-373.000.
Donadio, Lucien E. Personal diary sheet for the visually handicapped or the like. 274,239, 6-12-84, Cl. D19-1.000.
Donadio, Lucien E. Personal diary sheet for the visually handicapped or the like. 274,240, 6-12-84, Cl. D19-1.000.
Donadio, Lucien E. Calender sheet for the visually handicapped or the like. 274,241, 6-12-84, Cl. D19-20.000.
Dow Chemical Company, The: *See—*
Turnbull, Guy A., 274,223, Cl. D9-376.000.
Doyle, Edward J., to Conair Corporation. Hair drying bonnet. 274,272, 6-12-84, Cl. D28-19.000.
Drug Plastics & Glass Company: *See—*
Biesecker, Frederick N., 274,220, Cl. D9-352.000.
Biesecker, Frederick N., 274,221, Cl. D9-352.000.
Duffy, Peter B. Medical appliance for percussive respiratory therapy. 274,263, 6-12-84, Cl. D24-36.000.
Edmonds, Stephen A.; and Roberts, William C., Jr. Catamaran. 274,237, 6-12-84, Cl. D12-304.000.
Electro-Nucleonics, Inc.: *See—*
Hegemann, Manfred, 274,258, Cl. D24-8.000.
Everett, Lynn E., to Tusco, Inc. Merchandise display stand. 274,203, 6-12-84, Cl. D6-173.000.
Fieldhouse, Robert. Combined doll and container or similar article. 274,219, 6-12-84, Cl. D9-316.000.
Fineout, Gordon D. Drafting tool organizing device. 274,242, 6-12-84, Cl. D19-77.000.
Fitzpatrick, Bernard J. Sun shade. 274,235, 6-12-84, Cl. D12-191.000.
Genaro, Donald M.; McGarvey, John N.; Stern, Arthur L., Jr.; and Tilley, Alvin R., to AT&T Bell Laboratories. Combined telephone stand and clock radio or similar article. 274,247, 6-12-84, Cl. D14-73.000.
Gillette Company, The: *See—*
Markis, Beverly L., 274,222, Cl. D9-352.000.
GKN Kent Alloys Limited: *See—*
Woodward, Richard R., 274,236, Cl. D12-209.000.
Gorbahn, Fritz. Heat irradiation device for medical purposes. 274,265, 6-12-84, Cl. D24-68.000.
Grosfillex, Raymond, to Grosfillex S.A.R.L. Box for plants, flowers or the like. 274,229, 6-12-84, Cl. D11-155.000.
Grosfillex S.A.R.L.: *See—*
Grosfillex, Raymond, 274,229, Cl. D11-155.000.
GTE Products Corporation: *See—*
de Vos, Hendrik A. J., 274,214, Cl. D8-373.000.
Haggard, Merry: *See—*
Haggard, Robert E., 274,210, Cl. D8-1.000.
Haggard, Robert E., 274,211, Cl. D8-1.000.
Haggard, Robert E., to Haggard, Merry. Tree drain or similar article. 274,210, 6-12-84, Cl. D8-1.000.
Haggard, Robert E., to Haggard, Merry. Tree grate. 274,211, 6-12-84, Cl. D8-1.000.
Halliburton Company: *See—*
Cain, David E., 274,227, Cl. D10-83.000.
Hamilton, Leslie; and Holewinski, Robert D., to Johnson & Johnson Dental Products Company. Dental composite unit dose tray. 274,259, 6-12-84, Cl. D24-16.000.
Harris, Robert W.; and Weber, William R. Wood splitter. 274,253, 6-12-84, Cl. D15-127.000.
Hashimoto, Kiyoshi: *See—*
Kawashima, Tsunemi; Shimizu, Toshiharu; and Hashimoto, Kiyoshi, 274,231, Cl. D12-110.000.
Haymann, Frank V.; and King, David A., to Sable Enterprises (Proprietary) Limited. Display card holder. 274,278, 6-12-84, Cl. D20-40.000.
Hegemann, Manfred, to Electro-Nucleonics, Inc. Fluid loading device. 274,258, 6-12-84, Cl. D24-8.000.
Heilman, Marlin S.; and Langer, Alois A., to Mirowski, Mieczyslaw. Implantable defibrillator patch electrode or similar article. 274,262, 6-12-84, Cl. D24-29.000.
Hildenbrand, John L. Bottle-to-bottle transfer funnel. 274,208, 6-12-84, Cl. D7-68.000.
Holewinski, Robert D.: *See—*
Hamilton, Leslie; and Holewinski, Robert D., 274,259, Cl. D24-16.000.
Huddleston, Earl J.: *See—*
Brookshire, Phillip L.; Huddleston, Earl J.; and Hunt, David L., 274,287, Cl. D22-1.000.
Hunt, David L.: *See—*
Brookshire, Phillip L.; Huddleston, Earl J.; and Hunt, David L., 274,287, Cl. D22-1.000.
Hustveit, Borgar. Attachment coupler for a loading machine. 274,251, 6-12-84, Cl. D15-32.000.
Illinois Tool Works Inc.: *See—*
Weaver, William N.; and Marco, Leslie S., 274,224, Cl. D9-390.000.
Immuno Concepts, Inc.: *See—*
Valencia, Donald W., 274,261, Cl. D24-29.000.
Industrial Design Electronic Associates, Inc.: *See—*
De Vale, Donald P.; Wilbrandt, Howard B.; Tomlinson, Dennis E.; and Kubacki, Leonard J., 274,248, Cl. D14-115.000.
Inoue, Osamu: *See—*
Kohno, Mitsuji; and Inoue, Osamu, 274,232, Cl. D12-146.000.
International Telephone and Telegraph Corporation: *See—*
Asaki, James; and MacKenzie, William G., 274,243, Cl. D14-53.000.
J.C. Mfg. Co.: *See—*
Janes, Richard; and Chartier, Donald, 274,255, Cl. D15-199.000.
J&W Scientific, Inc.: *See—*
Jenkins, Rand G.; and Wohlers, Norman W., 274,257, Cl. D24-99.000.
Janes, Richard; and Chartier, Donald, to J.C. Mfg. Co. Tennis stringing apparatus. 274,255, 6-12-84, Cl. D15-199.000.
Jenkins, Henry H. Vacuum forming apparatus. 274,254, 6-12-84, Cl. D15-146.000.
Jenkins, Rand G.; and Wohlers, Norman W., to J&W Scientific, Inc. Precision bore fused silica tubing with tapered section. 274,257, 6-12-84, Cl. D24-99.000.
Johnson & Johnson Dental Products Company: *See—*
Hamilton, Leslie; and Holewinski, Robert D., 274,259, Cl. D24-16.000.
Kabushiki Kaisha Yakult Honsha: *See—*
Aramaki, Shinichiro, 274,217, Cl. D9-349.000.
Aramaki, Shinichiro, 274,218, Cl. D9-355.000.
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45.31 4,453,628
45.33 4,453,629
158 4,453,630
313 4,453,631
315.4 4,453,632
330 4,453,633
389 4,453,634
408 4,453,635
534 4,453,636
602 4,453,637

CLASS 208

11 R 4,454,017
4,454,018
22 4,454,019
4,454,020
48 R 4,454,021
4,454,022
96 4,454,023
111 4,454,024
120 4,454,025
251 H 4,454,026
253 4,454,027

CLASS 209

548 4,454,028
581 4,454,029
669 4,454,030

CLASS 210

86 4,454,031
96.1 4,454,032
108 4,454,033
4,454,034
117 4,454,035
4,454,036
120 4,454,037
150 4,454,038
164 4,454,039
235 4,454,041
283 4,454,040
401 4,454,042
659 4,454,043
663 4,454,044
672 4,454,045
698 4,454,046
705 4,454,047
726 4,454,048

CLASS 211

74 4,453,639
133 4,453,640
151 4,453,641

CLASS 212

78 4,453,642
184 4,453,643

CLASS 215

253 4,453,644

CLASS 219

10.53 4,454,402
10.55 B 4,454,404
10.55 E 4,454,403
61 4,454,405
73.1 4,454,406
121 EL 4,454,407
124.34 4,454,408

CLASS 220

22 4,453,645
258 4,453,646
288 4,453,647
324 4,453,648

CLASS 221

26 4,453,649

CLASS 222

43 4,453,650
82 4,453,651
504 4,453,652
528 4,453,653
594 4,453,654

CLASS 223

87 4,453,655

CLASS 224

247 4,453,656

CLASS 225

65 4,453,657
95 4,453,658

CLASS 226

20 4,453,659
74 4,453,660

CLASS 227

19 4,453,661

CLASS 228

56 4,453,662

CLASS 229

40 4,453,664
41 B 4,453,665
43 4,453,666

CLASS 232

7 4,453,667

CLASS 235

78 R 4,454,409
89 R 4,454,410
95 R 4,454,411
101 4,454,412
375 4,454,413
379 4,454,414

CLASS 236

34.5 4,453,668

CLASS 237

12.3 R 4,453,669

CLASS 239

117 4,453,670
124 4,453,671
166 4,453,672
236 4,453,673
483 4,453,674
675 4,453,675

CLASS 241

60 4,453,676

CLASS 242

18 R 4,453,677
27 4,453,678
54 A 4,453,679
85 4,453,680
107.4 A 4,453,681
192 4,453,682
199 4,453,683

CLASS 244

129.5 4,453,684

CLASS 248

146 4,453,685
168 4,453,686
183 4,453,687
262 4,453,688
288.1 4,453,689
309.1 4,453,690
542 4,453,691
552 4,453,692
559 4,453,693
4,453,694
660 4,453,695

CLASS 250

201 4,454,415
214 A 4,454,416
216 4,454,417
227 4,454,418
239 4,454,419
270 4,454,420
336.1 4,454,421
363 S 4,454,422
374 4,454,423
390 4,454,424
423 P 4,454,425

CLASS 251

4 4,453,696
10 4,453,295
14 4,453,697
63.4 4,453,699
129 4,453,700
144 4,453,698

CLASS 252

8.8 4,454,049
42 4,454,050
51.5 R 4,454,059
61 4,454,051
68 4,454,052
71 4,454,053
135 4,454,054
174.15 4,454,056
194 4,454,055
299.1 4,454,057
500 4,454,058
547 4,454,060
625 4,454,061
630 4,454,062

CLASS 254

371 4,453,701

CLASS 260

112.5 R 4,454,065
124 R 4,454,066
176 4,454,067
239 R 4,454,068
245.3 4,454,069
429 R 4,454,070
453 P 4,454,071
458 F 4,454,072
501.21 4,454,073
503 4,454,074
513 R 4,454,075
944 4,454,063
974 4,454,064

CLASS 261

41 D 4,454,080
44 C 4,454,076
91 4,454,077
93 4,454,078
111 4,454,079

CLASS 264

4.7 4,454,083
26 4,454,081
40.1 4,454,082
41 4,454,084
53 4,454,085
4,454,086
4,454,087
115 4,454,088
140 4,454,089
154 4,454,090
171 4,454,091
349 4,454,092

CLASS 266

49 4,453,702
157 4,453,703

CLASS 269

8 4,453,704
37 4,453,705

CLASS 270

54 4,453,706
60 4,453,707

CLASS 271

8 A 4,453,708
195 4,453,709

CLASS 272

122 4,453,710

CLASS 273

86 B 4,453,712
86 R 4,453,711
118 R 4,453,713
148 A 4,453,714
153 S 4,453,715
186 A 4,453,716
192 4,453,717
249 4,453,718
265 4,453,719
411 4,453,720

CLASS 277

3 4,453,721
89 4,453,722
164 4,453,723

CLASS 280

5 A 4,453,724
6 R 4,453,725
11.12 4,453,727
11.2 4,453,726
154.5 R 4,453,728
242 WC 4,453,729
281 R 4,453,730
605 4,453,731
648 4,453,732
661 4,453,733
662 4,453,734
690 4,453,735
711 4,453,736
725 4,453,737
4,453,738
755 4,453,739
781 4,453,740
801 4,453,741
818 4,453,742

CLASS 281

18 4,453,743

CLASS 285

4 4,453,749
18 4,453,745
256 4,453,746
305 4,453,747
316 4,453,748

CLASS 290

1 R 4,454,426
2 4,454,427
40 R 4,454,428
53 4,454,429

CLASS 292

66 4,453,750
340 4,453,751
341.19 4,453,752
348 4,453,753

CLASS 294

15 4,453,754
64 A 4,453,755
86 R 4,453,757
86.29 4,453,756
104 4,453,758

CLASS 296

37.13 4,453,760
37.8 4,453,759
43 4,453,761
97 A 4,453,762
185 4,453,763

CLASS 297

153 4,453,764
195 4,453,765
316 4,453,766
362 4,453,767
440 4,453,768

CLASS 299

2 4,453,769
7 4,453,770
34 4,453,771
37 4,453,772
4,453,773
42 4,453,774
81 4,453,775

CLASS 301

5 VH 4,453,776

CLASS 303

2 4,453,777
22 A 4,453,779
22 R 4,453,778
69 4,453,780
112 4,453,781
116 4,453,782

CLASS 307

265 4,454,430
296 R 4,454,431
456 4,454,432
493 4,454,433
523 4,454,434
530 Re.31,600
4,454,435

CLASS 308

184 R 4,453,783
187 4,453,784

CLASS 310

11 4,454,436
83 4,454,437
162 4,454,438
179 4,454,439
313 R 4,454,440
328 4,454,441
4,454,442
348 4,454,443
360 4,454,444

CLASS 312

10 4,453,785
31.1 4,453,786
215 4,453,787
231 4,453,788
324 4,453,789
348 4,453,790

CLASS 313

120 4,454,445
480 4,454,446
492 4,454,447
493 4,454,448
584 4,454,449
620 4,454,450

CLASS 315

58 4,454,451
86 4,454,452
106 4,454,453

CLASS 318

71 4,454,455
129 4,454,456
135 4,454,457
254 4,454,458
293 4,454,454
305 4,454,459
491 4,454,460
717 4,454,461
729 4,454,462

CLASS 322

4 4,454,463
28 4,454,464
49 4,454,465

CLASS 323

258 4,454,466
313 4,454,467
365 4,454,468

CLASS 324

61 P 4,454,469
78 R 4,454,470
141 4,454,471
158 R 4,454,472
262 4,454,473
309 4,454,474
392 4,454,475
424 4,454,476

CLASS 328

149 4,454,477

CLASS 330

254 4,454,478
263 4,454,479
297 4,454,480
307 4,454,481

CLASS 331

3 4,454,482
11 4,454,483
17 4,454,484
109 4,454,485

CLASS 332

16 R 4,454,486

CLASS 333

28 R 4,454,487
195 4,454,488
227 4,454,489

CLASS 335

16 4,454,490
208 4,454,491

CLASS 336

69 4,454,492

CLASS 337

368 4,454,493

CLASS 338

34 4,454,494
195 4,454,495

CLASS 339

29 B 4,453,791
64 R 4,453,792
75 M 4,453,793
90 F 4,453,794
92 M 4,453,795
132 B 4,453,797
143 R 4,453,798
177 R 4,453,796
256 SP 4,453,799

CLASS 340

52 R 4,454,497
347 AD 4,454,500
347 DD 4,454,498
4,454,499
365 R 4,454,501
507 4,454,502
648 4,454,503
665 4,454,504
712 4,454,505
728 4,454,506
744 4,454,507
825.05 4,454,508
825.69 4,454,509
980 4,454,496

CLASS 343

5 GC 4,454,510
7.7 4,454,511
12 R 4,454,512
18 E 4,454,513
700 MS 4,454,514
882 4,454,515

CLASS 346

76 PH 4,454,516
136 4,454,517
140 R 4,454,518
4,454,519
153.1 4,454,520
208 4,454,521
216 4,453,744

CLASS 350

1.4 4,453,800
96.12 4,453,801
96.15 4,453,802
96.32 4,453,803
162.12 4,453,804
162.24 4,453,805
431 4,453,806
529 4,453,807

CLASS 351

208 4,453,808

CLASS 352

11 4,453,809

CLASS 353

55 4,453,810

CLASS 354

107 4,453,814
269 4,453,815
271.1 4,453,816
299 4,453,817
403 4,453,812
406 4,453,818
412 4,453,811
480 4,453,813

CLASS 355

3 SH 4,453,819
3 TR 4,453,820
14 C 4,453,821
43 4,453,822
50 4,453,823
57 4,453,824

CLASS 356

5 4,453,825
333 4,453,826
353 4,453,827
357 4,453,828

CLASS 357

5 4,454,522
15 4,454,523
23 4,454,524
4,454,525
30 4,454,526
38 4,454,527
40 4,454,528
75 4,454,529

CLASS 358

10 4,454,530
17 4,454,531
29 4,454,532
31 4,454,533
4,454,534
60 4,454,535
76 4,454,536
77 4,454,537
86 4,454,538
106 4,454,539
4,454,540
4,454,541
4,454,542
118 4,454,543
120 4,454,544
213 4,454,545
260 4,454,546
293 4,454,547

CLASS 360

66 4,454,548
77 4,454,549
137 4,454,550
4,454,551

CLASS 361

9 4,454,552
31 4,454,553
41 4,454,554
59 4,454,555
73 4,454,556
93 4,454,557
153 4,454,558
214 4,454,559
257 4,454,560
275 4,454,561
288 4,454,562
306 4,454,563
336 4,454,564
376 4,454,565
386 4,454,566
433 4,454,567

CLASS 362

32 4,454,568
127 4,454,569
231 4,454,570

CLASS 363

60 4,454,571
68 4,454,572
98 4,454,573
134 4,454,574

CLASS 364

200 4,454,575
4,454,576
4,454,577
4,454,578
4,454,579
4,454,580
4,454,581
427 4,454,582
449 4,454,583
507 4,454,585
513.5 4,454,586
527 4,454,587
551 4,454,588
716 4,454,589
724 4,454,590
900 4,454,591
4,454,592
4,454,593
4,454,594
4,454,595
4,454,596

CLASS 366

13 4,453,829
63 4,453,830
65 4,453,831
98 4,453,867
150 B1 4,217,054
167 4,453,832

CLASS 367

12 4,454,597
83 4,454,598

CLASS 368

88 4,453,833
201 4,453,834

CLASS 369

77.2 4,454,599

CLASS 371

25 4,454,600
34 4,454,601

CLASS 372

36 4,454,602
46 4,454,603

CLASS 373

30 B1 4,366,571

CLASS 374

185 4,453,835

CLASS 375

1 4,454,604

CLASS 376

282 4,454,093

CLASS 378

57 4,454,605
97 4,454,606

CLASS 381

7 4,454,607
51 4,454,608
68 4,454,609

CLASS 382

3 4,454,610

CLASS 384

94 4,453,836
125 4,453,838

CLASS 400

120 4,453,839
124 4,453,840
126 4,453,841
605 4,453,842
645.5 4,453,847
661 4,453,848

CLASS 401

193 4,453,849

CLASS 402

4 4,453,850
15 4,453,851

CLASS 403

1 4,453,852
28 4,453,853
295 4,453,855

CLASS 404

72 4,453,844
91 4,453,856

CLASS 405

128 4,453,857
198 4,453,858
202 4,453,859
259 4,453,845
4,453,860
267 4,453,861
4,453,862
282 4,453,863
299 4,453,846

CLASS 406

19 4,453,864
24 4,453,865
70 4,453,866

CLASS 408

138 4,453,868

CLASS 411

38 4,453,869

CLASS 414

22 4,453,872
43 4,453,870
120 4,453,873
123 4,453,874
183 4,453,876
304 4,453,875
384 4,453,871
411 4,453,877
491 4,453,878
509 4,453,879
525 R 4,453,880
534 4,453,881
728 4,453,882
735 4,453,883
745 4,453,884

CLASS 415

63 4,453,885
83 4,453,886
119 4,453,887

CLASS 416

97 R 4,453,888
198 A 4,453,889
220 R 4,453,890
4,453,891

CLASS 417

279 4,453,892
4,453,893
332 4,453,894
422 4,453,895
462 4,453,896
477 4,453,897
521 4,453,898

CLASS 418

55 4,453,899
99 4,453,900
206 4,453,901

CLASS 422

56 4,454,094
64 4,454,095
249 4,454,096

CLASS 423

8 4,454,097
55 4,454,098
210 4,454,099
4,454,100
242 4,454,101
244 4,454,102
309 4,454,103
349 4,454,104
440 4,454,105

CLASS 424

1.1 4,454,106
4,454,107
16 4,454,108
50 4,454,109
54 4,454,110
58 4,454,111
60 4,454,112
63 4,454,113
70 4,454,114
85 4,454,115
92 4,454,116
4,454,117
95 4,454,118
170 4,454,119
177 4,454,120
4,454,121
180 4,454,122
4,454,123
195 4,454,124
201 4,454,125
212 4,454,126
218 4,454,127
229 4,454,128
244 4,454,134
245 4,454,135
4,454,136
4,454,137
246 4,454,129
248.4 4,454,130
248.51 4,454,131
250 4,454,132
253 4,454,138
258 4,454,139
260 4,454,140
4,454,141
4,454,142
263 4,454,143
4,454,144
266 4,454,145
267 4,454,133
270 4,454,146
4,454,147
4,454,148
273 R 4,454,149
274 4,454,150
4,454,151
283 4,454,152
289 4,454,153
309 4,454,154
317 4,454,155
319 4,454,156
325 4,454,157
330 4,454,158
358 4,454,159

CLASS 425

12 4,453,910
47 4,453,902
117 4,453,903
119 4,453,904
192 R 4,453,905
224 4,453,906
326.1 4,453,907
331 4,453,908
511 4,453,909
525 4,453,911
589 4,453,912

CLASS 426

34 4,454,160
48 4,454,161
74 4,454,162
549 4,454,163
4,454,164
592 4,454,165

CLASS 427

85 4,454,166
96 4,454,167
4,454,168
125 4,454,169
160 4,454,170
209 4,454,171
234 4,454,172
235 4,454,173
237 4,454,174
242 4,454,175
246 4,454,176
294 4,454,177
302 4,454,178

CLASS 428

41 4,454,179
42 4,454,180
68 4,454,181
74 4,454,182
92 4,454,183
93 Re.31,601
110 4,454,184
121 4,454,185
148 4,454,186
159 4,454,187
172 4,454,188
224 4,454,189
244 4,454,191
281 4,454,190
294 4,454,192
322.2 4,454,199
322.7 4,454,193
323 4,454,194
336 4,454,195
359 4,454,196
379 4,454,197
402 4,454,198
411.1 4,454,200
413 4,454,201
423.1 4,454,202
520 4,454,203
542.4 4,454,204
556 4,454,205
692 4,454,206

CLASS 429

17 4,454,207
163 4,454,208

CLASS 430

5 4,454,209
31 4,454,210
39 4,454,211
4,454,212
76 4,454,213
110 4,454,214
115 4,454,215
204 4,454,216
253 4,454,217
277 4,454,218
281 4,454,219
311 4,454,220
316 4,454,221
326 4,454,222
393 4,454,224
505 4,454,225
533 4,454,223

CLASS 431

8 4,453,913
121 4,453,914

CLASS 432

11 4,453,915
197 4,453,916

CLASS 433

5 4,453,917
55 4,453,918
120 4,453,919

CLASS 434

334 4,453,920

CLASS 435

7 4,454,226
240 4,454,227
253 4,454,228

CLASS 436

68 4,454,229
74 4,454,230
500 4,454,231
504 4,454,232
525 4,454,233
526 4,454,234
536 4,454,235

CLASS 445

23 4,453,921

CLASS 446

37 4,453,342
46 4,453,338
227 4,453,339
437 4,453,340
450 4,453,341

CLASS 464

57 4,453,922

CLASS 474

47 4,453,923
135 4,454,236
160 4,453,924

CLASS 501

2 4,454,237
38 4,454,238
99 4,454,239

CLASS 502

26 4,454,240
68 4,454,241
113 4,454,242
167 4,454,243
208 4,454,244
209 4,454,245
213 4,454,246

CLASS 521

27 4,454,247
53 4,454,248
54 4,454,249
75 4,454,250
107 4,454,251
110 4,454,252
112 4,454,253
136 4,454,254
137 4,454,255
138 4,454,256
157 4,454,257

CLASS 523

116 4,454,258
129 4,454,259
130 4,454,260
200 4,454,261
210 4,454,262
400 4,454,263
414 4,454,264
420 4,454,265

CLASS 524

5 4,454,285
43 4,454,267
44 4,454,266
47 4,454,268
69 4,454,269
102 4,454,270
157 4,454,274
164 4,454,275
209 4,454,276
211 4,454,277
241 4,454,272
317 4,454,273
343 4,454,278
376 4,454,279
398 4,454,280
399 4,454,281
407 4,454,282
424 4,454,283
427 4,454,284
503 4,454,286
508 4,454,287
588 4,454,288

CLASS 525

53 4,454,299
71 4,454,300
118 4,454,301
132 4,454,271
167 4,454,302
210 4,454,304
211 4,454,303
310 4,454,305
323 4,454,306
379 4,454,307
444 4,454,308
454 4,454,309

CLASS 526

106 4,454,293
344.3 4,454,294

CLASS 527

311 4,454,295

CLASS 528

75 4,454,296
111 4,454,297
137 4,454,298
188 4,454,310
245 4,454,311
275 4,454,312
302 4,454,313

CLASS 536

1.1 4,454,289
7.1 4,454,314
18.1 4,454,290
18.2 4,454,315
123 4,454,316

CLASS 544

193 4,454,317
241 4,454,318
252 4,454,319
300 4,454,320

CLASS 546

184 4,454,321
337 4,454,324

CLASS 548

221 4,454,322
251 4,454,323
425 4,454,325
453 4,454,326
491 4,454,291
4,454,292
551 4,454,327

CLASS 549

28 4,454,328
413 4,454,329
420 4,454,330

CLASS 556

448 4,454,331

CLASS 560

1 4,454,333
12 4,454,334
4,454,335
13 4,454,336
22 4,454,337
34 4,454,338
55 4,454,339
56 4,454,340
039 4,454,332
100 4,454,341
204 4,454,342
226 4,454,343

CLASS 562

401 4,454,344
410 4,454,345
535 4,454,346

CLASS 564

428 4,454,347
435 4,454,348

CLASS 568

13 4,454,349
319 4,454,350
347 4,454,351
374 4,454,352
454 4,454,353
473 4,454,354
584 4,454,355
697 4,454,356
804 4,454,357
885 4,454,358
916 4,454,359
936 4,454,360
937 4,454,361
938 4,454,362

CLASS 585

259 B1 4,260,840
428 4,454,363
470 4,454,364
480 4,454,365
525 4,454,366
533 4,454,367
646 4,454,368
719 4,454,369

CLASS 604

14 4,453,925
47 4,453,926
52 4,453,927
53 4,453,928
56 4,453,929
59 4,453,930
153 4,453,931
4,453,932
179 4,453,933
191 4,453,934
197 4,453,935
263 4,453,936
319 4,453,937
346 4,453,938
368 4,453,939
408 4,453,940

D2—	184	274,194	D8—	1	274,210		74	274,226		71	274,246	D21—	88	274,279		36	274,263
D3—	28	274,195			274,211		83	274,227		73	274,247		107	274,280		64	274,264
D4—	12	274,196		330	274,212	D11—	103	274,228		115	274,248		121	274,281		68	274,265
D6—	28	274,197		356	274,213		155	274,229		116	274,249		188	274,282		99	274,257
		274,202		373	274,214	D12—	37	274,230	D15—	14	274,250		197	274,283	D25—	73	274,266
	31	274,198		375	274,215		110	274,231		32	274,251		225	274,284		74	274,267
	37	274,199		394	274,216		146	274,232		124	274,252		246	274,285	D26—	26	274,268
	73	274,200	D9—	316	274,219		158	274,233		127	274,253			274,286		28	274,269
	86	274,201		349	274,217		163	274,234		146	274,254	D22—	1	274,287		93	274,270
	173	274,203		352	274,220		191	274,235		199	274,255	D23—	49	274,288		125	274,271
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	42	274,207		376	274,223	D14—	53	274,243		20	274,241		19	274,260	D34—	33	274,275
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	77	274,209	D10—	23	274,225		64	274,245	D20—	40	274,278			274,262			

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